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THE

INDIAN LANCET.

A Weekly Journal of Medicine, Surgery Public Health and of General Medical Intelligence.

Edited by RUDOLPH MONNIER M.B., M.S., Edin.

Vol. XXXI.] CALCUTTA, MONDAY, MARCH 2nd, 1908. [No. 9

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Qui docet, discit

THE VALUE OF THE LEUCOCYTE COUNT IN THE DIAGNOSIS OF ACUTE INFLAMMATORY DISEASE.*

FREDERIC E. SONDERN, M.D.

The value of the leucocyte count, the differential count of leucocytes, and the relationship they bear to one another, in the diagnosis of acute inflammatory lesions, has been the subject of much investigation, many contributions to medical literature and some controversy. Since the appearance of my first communication on the subject, about three years ago, the frequent employment of this method in both hospital and private practice, as an aid in diagnosis and prognosis, bears testimony to its usefulness. In a series of papers written subsequently, further personal experiences have been detailed, and one read before the Surgical Section of the Academy in December last, voices my present opinion in the matter. I am before you this evening on the same subject, at the request of your secretary and can but repeat what was said then, adding only a few words concerning additional refinements which have been described in the meantime.

When making use of the leucocyte count, the differential count and their ratio in the diagnosis and prognosis of inflammatory lesions, the increase in the relative number of polynuclear cells is an indication of the amount of toxin absorbed; and the increase in the total number of leucocytes is the evidence of the body resistance to this absorption. Consequently, the differential leucocyte count alone, or the total leucocyte count alone, is not as instructive as the combined figures, because the relative disproportion of the polynuclear cells to total leucocyte count is the best indication of the severity of the process.

Slight increase in the relative number of polynuclear cells usually indicates slight infection, while decided increase indicates severe infection. Slight polynuclear increase with slight leucocytosis indicates slight infection and fair resistance, while slight polynuclear increase and high leucocytosis indicates slight infection and pronounced resistance. Decided polynuclear increase and pronounced leucocytosis indicates severe infection and good resistance; decided polynuclear increase and slight leucocytosis indicates severe infection and poor resistance; and decided polynuclear increase and no leucocytosis indicates severe infection and no resistance. Increasing polynuclear count with decreasing total leucocyte count indicates greater severity and diminishing resistance, while decreasing polynuclear count with decreasing total leucocyte count indicates improvement.

Dr. C. L. Gibson, in Annals of Surgery, April, 1906, reaches the following conclusions concerning the value of the method in cases of general surgery: "The differential blood count and its relation to the total leucocyte count is at present the most valuable diagnostic and prognostic aid in acute surgical diseases that is furnished by any of the methods of blood examination. It is of value chiefly in indicating fairly consistently the existence of suppuration or gangrene, as evidenced by an increase of the polynuclear cells disproportionately high as compared to the total leucocytosis. The greater the disproportion, the surer are the findings, and in extreme disproportions the method has proved itself practically infallible." Dr. Gibson also describes a standard chart for the purpose of graphic illustration of the disproportion mentioned, and in the attempts to use the method as an aid in the diagnosis of suppurative conditions, this chart will prove valuable. When introducing a laboratory method to clinicians it is essential not only to quote the practical results to be obtained and the existing errors, but also to cite a series of cases in which its usefulness is demonstrated. This is a difficult task for the laboratory worker and not necessary in this instance, as the publications by Gibson in surgery, Taylor in gynecology and McKernon in otology are both clinically and technically explicit. Dr. McKernon's article "The Clinical Value of the Differential Blood Count in Operative Otology," read before the Surgical Section of the Academy, on December 20, 1906, and pub-

*Read at a meeting of the Otological Section of the N. Y. Academy of Medicine, November 8, 1907.

lished in the New York Medical Journal for January 19 of this year, covers a larger experience with this method in his specialty than any other I know of.

I shall now endeavor to explain, as far as possible, the exceptions which have been observed in the use of this diagnostic aid and this will include a consideration of the few fallacies to which McKernon directs attention in his paper. It has generally been noted, as Dr. McKernon states, the inflammatory lesions confined to cellular bone structures do not show the high figures in polynuclear increase or leucocytosis seen when soft parts are involved, but the disproportion between the polynuclear percentage and the total leucocyte count is present and this constitutes the important feature. Suppurative processes on the surface of mucous membranes or mixed infection with, or following tubercle bacilli or typhoid bacilli present the same peculiarity. When purulent exudates are confined in dense pyogenic membrane or when they are the result of typhoid bacilli or tubercle bacilli without other organisms, there is no leucocytosis and no relative polynuclear increase. The exact nature of the infection also has a bearing on the degree of polynuclear increase and total leucocyte count, some organisms causing higher figures than others, everything else being equal. It is a strange coincidence that almost all glaring exceptions which have come to my notice have been in hospital practice, and this creates the suspicion that the counts have not been properly made. While the procedure is a simple one, its routine execution is certainly monotonous and we all know from experience of one kind or another how the hospital junior dislikes monotonous work. An improperly spread slide with a differential count made along its edges makes a short task but will lead to a ludicrous result in any case.

With the exercise of every precaution, however, a relatively very small number of cases is met with in which the examination does not reflect the true condition. These are usually patients with much reduced vitality and it seems reasonable to look to one of two cases for an explanation. Either the vitality is so low that absorption of toxin does not take place, or on account of improper circulation, the drop of blood taken from the finger or ear does not represent the actual condition of the blood as a whole. It is probable that this is the reason why the method does not work out as well in infants and young children, particularly in those where prostration is extreme. If investigation proves the value of the Arneth count as an index of phagocytic power, it will be of particular value in these cases but there is still considerable doubt as to its usefulness. Joseph Arneth in his book on Neutrophilic Leucocytes and in subsequent papers claims a difference in phagocytic power between the young and the older polymorphonuclear cells and believes that good phagocytic power exists only in the older cells which have three or more nuclei. His index of phagocytic power is obtained by learning the actual number of polynuclear cells with three or more nuclei in 1 cm. This is done by determining the total leucocyte count, the polynuclear percentage and thus the number of polynuclear cells in 1 cm. On counting the relative number of cells containing three or more nuclei their actual number in 1 cm can be figured. This index of phagocytic power is believed to be a valuable aid in both diagnosis and prognosis of acute infectious lesions. A number of articles have been written in support of Arneth's view, among others one by Dr. A. E. Chace on work done in the Post Graduate Pathological Laboratory, and he considers it of decided use in prognosis. Numerous objections to Arneths original hypothesis have also appeared and its clinical utility is still open to question. For the past year I have been making the Arneth count in all specimens where it seemed indicated and while considerable data has accumulated I am as yet unprepared to voice an opinion.

The claim of Wright and Douglas that the opsonios in the blood are diminished in certain bacterial infections and that this diminution can be learned by determining the opsonic index, immediately suggested the use of this determination in the clinical laboratory as an aid in diagnosis and prognosis. The procedure is at best a very tedious one and the technic is not yet sufficiently practical for two workers to obtain anywhere near the same result; Park also calls attention to this in his recent article in the Journal of Medical Research. These objections, together with Wright's statements that single observations are of but little value, that localized infections may show no deviation from the normal, and that in acute cases with systemic symptoms, high index may alternate with low index, are ample evidence why this method is without value as a routine diagnostic aid.

In conclusion I beg leave to repeat, that laboratory methods no matter how important, are aids only to the physician; they are not intended to replace his clinical diagnostic skill or his prognostic ability based on clinical experience.—AMERICAN JOURNAL OF SURGERY.

A FEW FACTS REGARDING PHTHISIS.

By Dr. Langfeld.

It is extremely galling if one makes the discovery of having enthusiastically and patiently advocated an erroneous idea, and to publicly acknowledge this is a death-blow to one's self-conceit The decisive use of the "surgeon's knife," however, entails fresh and healthy life in place of the old, apparently flourishing, but in reality diseased condition.

Thus might roughly be summarized the opinion on the present treatment of phthisis. The sanatorium therapy, regarded in the light of the desired final result, i.e., the stamping out of the disease, has proved unsatisfactory. The so-called "cures" have been changed into an "improved state" of the cases, although the qualification for admission has been narrowed. To have predicted this outcome about fifteen years ago is the merit of but few (including the author), who were either derided or consigned to oblivion through silence. The results, however, derived from the serum therapy cannot be said to be exactly encouraging, and if one has correctly understood the hygienic standpoint, may even be called erroneous; for the only permanently effective serum still is the improvement of the social conditions, which may be summed up in nourishment, air, and light. Herein lies also the ideal of hygiene, which from within firmly establishes immunity, instead of levelling down the individual capacity of resistance by more or less general technical devices.

Notwithstanding the drawbacks, these two methods of treatment have been combined—a characteristic admission—and plausible essays have been published with regard thereto. At the meetings of the various associations a wide scope has been allowed to optimism, and now, as ever, many sufferers look forward to the dawn. He who seeks will find, whether we revert to Moses, the ancient (though still modern) hygienist, and shift the main point of hygienic understanding and observance to cult and school, or whether we discover something that is capable of destroying the exciter of disease in the organism at any stage of phthisis. The first way is the reliable course, but it takes much time, and to carry it out requires courage, self-denial, and idealism. The second course is probably shorter, and would mean a "medicsl act of habeas corpus" of at least equal importance as the legal one.

For about fifteen years I have written and experimented in both directions, and I may state that my ideas have gained gound. This is a sure sign of the correctness of my views, seeing that there exist no joint schemes nor personal relations of any kind, unless it be on the part of opponents on principle.

In respect of influencing the masses in favour of hygienic reasoning and practice, slight but steady progress has been made, and will form the subject of a publication in the spring. The individual combat against the tubercle bacillus, i.e., the endeavour to destroy it in the organism, has been made, as far as I can see from my observations extending over six months, by another with perceptible results.

It is hard for a conscientious observer to make up his mind to recommending a remedy for phthisis, and in the following I submit my trials to criticism.

In order to avoid want of clearness I only refer to cases as were hopeless for treatment, such as is usual at sanatoria or by serum, and in which it was a question of successfully treating copious and highly virulent sputum. There were subjected to treatment those patients who had not only a hereditary taint and lived under bad social conditions, but who, irrespective of their unhealthy occupations (watchmaker, tailor, and compositor) were alcoholics, and who, although comparatively young, had led a dissolute life. The miserable social conditions prevented over-abundance of nourishing diet and no change of air, and the housing conditions induced continual re-infection.

All the patients had the so-called tubercular habitus, and were in a state of malnutrition. They belonged to the class that indulged at the week-end in excesses. Fantastic in politics, quarrelsome when intoxicated, they opposed any moral influence with high-sounding phrases, and it was difficult to induce them to undergo treatment free of charge. All of them had a fairly clear notion of their disease. Their ages ranged from twenty-two to twenty-nine. The remedy employed was the well-known Cellotropin, in doses up to 4 grms. per day. The duration of treatment was from two to six months In order to have a control as exact as possible an examination was made every fortnight, and they were, instructed to send every other week post-cards giving a brief account regarding weight, cough, and sputum. The sputum also was examined every fortnight, and cultivation experiments were made.

Especially characteristic were the following cases:—

Case I.—E. B., a watchmaker, twenty-six years of age. Height 5 feet 10 inches; weight, 9 stone 7 lbs. His father, an asthmatic died of phthisis at thirty-one years of age, leaving four children. The patient's mother had died previously of hæmorrhage. All the brothers and sisters were scrofulous. One sister, married, suffered from phthisis. A brother and sister, aged twenty and twenty-one respectively, died of phthisis The patient was permanently disqualified for military service. He had had measles, fever after vaccination, was always

catching cold, and frequently afflicted with epistaxis. The patient was tall and very thin. Typical thorax. Carriage bent forward. Long neck. Pallor. For about two and a half years he had cough accompanied by expectoration, with exacerbation when exposed to fog and cold wind. Night sweats, asthma, no appetite, headache, languor, attacks of giddiness. In short, picture of a genuine phthisic. He worked about twelve hours a day, and at week-ends was generally intoxicated. Over both apices pronounced dulness; on the whole of the left half purring vesicular rales and panting. Tubercle bacilli abundant, pus with scanty streptococci. Heart affected by chronic abuse of nicotine. Pulse small, weak, and irregular. Temperature 38° C. in the evening. Urine contained large quantity of oxalic acid, but no pus, blood, albumen, or sugar. Treatment: Four times daily as much Cellotropin as covered a threepenny piece, in cold milk, to be taken between meals. Within the first ten days the body-weight remained stationary, but the sputum increased enormously, so that the patient thought the powder did not agree with him; thenceforward continued decrease. Gradual abatement of the night-sweats. After three weeks no fever in the evening, and the appetite began to increase. After fourteen days the sputum had greatly diminished. Three cultivations were made, two of which were negative after eight days, and one only very scantily responded, which, after four weeks also gave a negative result. After eight weeks no tubercle bacilli were found. Night-sweats, fever, and asthma had completely ceased. Body weight was almost unaltered. The general health, however, had considerably improved, and depression had given way to hope. The patient smoked only one pipe daily, had given up venereal excess, drank stout instead of spirits, took cod liver oil, and on Sundays exercised in the open air. He was shown how to disinfect his mouth, &c., and was discharged with the advise to continue taking 1 grm. of Cellotropin twice a day, and to come again for examination in six weeks time. He did so, and it was found that he had increased fifteen pounds in weight, and was free from expectoration and trouble. The examination of the lungs disclosed the dulness at the apices and on the left half to be unaltered. The patient was discharged with appropriate directions, and instructed to come again at once in the event of any alarming symptom. His last post-card, sent six months after the commencement of the treatment, stated that his appetite was good, the cough had disappeared, and the body-weight had increased twenty-six pounds.

Case II.—P. K., twenty-four years of age, compositor. Height, 5 feet 7¾ inches; weight, 9 stone. His father, a shoemaker, had died of consumption, his mother of dropsy. Three brothers and sisters died of convulsions due to teething. The patient had had measles and scarlet fever. At eighteen he had tetanus, caused by an injury to a nail. When twenty he contracted syphilis and underwent "Zittmann's cure"; no relapse according to his statement. An examination showed that he was suffering from chronic gonorrhœa. The patient was thin, hollow-eyed, underfed, with signs of dentes saturnini, cough, night-sweats, fœtor ex ore, bad teeth. An alcoholic, who had undergone treatment for delirium tremens. Pharyngitis; pronounced rales at both the upper apices of the lungs, and vesicular murmurs on the left side, below. Nothing abnormal as regards the heart. The stomach sensitive to pressure, also the gall-bladder, which was not palpable. The liver was somewhat thickened at the lower edge. The epigastrium and abdomen were sunk and of grey appearance. Off and on diarrhœa set in. The appetite indifferent. Kidneys and spleen normal. The urine turbid, with a pronounced reddish, mucus-like sediment, and contained much oxalic acid, gonorrhœal threads, vesical epithelia, and some pus. No sugar or albumen, but isolated bile pigments. An examination for syphilis was negative. There was no glandular swelling, nor were spirochet. pall. observed. Sputum: mixed infection, numerous tubercle bacilli and streptococci. No elastic threads. Temperature in the evening 37·9° to 38·1° C. The case was hopeless, and very suitable, therefore, for trying the effect of Cellotropin. Treatment: The patient was given 1 grm. of Cellotropin four times daily. During the first eleven days the sputum increased enormously. After eight days the development of tubercle bacilli was codsiderably arrested; after four weeks not one of three cultivations fructified. After ten weeks there was no fever in the evening. The night-sweats continued in a diminished degree until the end of the fourth month. The body-weight of the patient remained almost stationary. The appetite still left something to be desired. With the fifth month a "feeding-up" cure was carefully resorted to, viz., a combination of eubiose and cod-liver oil emulsion, aa partes, and milk. The patient was given daily four tablespoonfuls of the eubiose and cod liver oil and two litres of milk. The weight increased by slow degrees, and at the seventh month he was discharged as improved.

Case III.—F. R., twenty-seven years of age, tailor. Height 5 feet 5 inches; weight, 9 stone 10½ pounds. Parents died in his early childhood, and he was brought up in an orphanage. No brother or sister. Mother's family had a phthisical history. His father, a locksmith, was said to have been given to drink. Measles, scarlet fever. He had always been weakly, and suffered constantly from colds. He had furunculosis when

seventeen, and syphilis when twenty-five. Three times he was subjected to treatment by inunction. The patient was pale and very anæmic, thoroughly "run down." He was subject to alcoholic tremors in both hands; no symptoms of tabes. Very bad teeth. Pronounced fœtor ex ore. He patient smoked excessively, and on Saturdays regularly got intoxicated. The thorax typically sunk, circumference 74 cm. Difference in volume of respiration, 4 cm. When holding his breath he immediately began to cough. The greenish-yellow expectoration was vesicular and showed fine streaks of blood. The whole of the left lung, more especially the lower lobe, was diseased. Tubercle bacilli and pus cocci in sputum. Heart was somewhat dilated. Pulse was small, rapid, irregular. Liver not palpable. Night-sweats, but not regularly. Epigastrium and relaxed abdominal walls sensitive. Chronic gastric catarrh and frequent diarrhœa. Off and on (on Sundays and Mondays) vomitus matutinus. Appetite low. Temperature 37·2° C. The patient, who attended on Monday evenings, conveyed the impression of great depression. He was aware of his condition, but clung to the idea of living with one lung. Treatment: The mode of living to be thoroughly changed. In the morning half a bottle of Fachingen mineral water to be taken, warm, in bed. As much Cellotropin as covered a threepenny piece to be taken four times a day. As the urine, which contained a quantity of oxalic acid, was in a state of fermentation, and as albumen was present, 1 grm. of Urotropine in half a bottle of Fachingen mineral water to be taken cold in the evening when going to bed. The quantity of the sputum increased at first, then diminished, and therewith lessened the virulence of the tubercle bacilli, no cultivation of which fructified after six weeks. The body-weight remained stationary during the first ten weeks, the general health improved, and the night-sweats disappeared. After six months the whole left lung was in the course of healing. N more tubercle bacilli were seen in the scanty sputum. A "feeding up" cure was resorted to, and the patient was discharged as improved.

With reference to the above case, I would mention that there were no symptoms of syphilis, that no spirochet. pall. was found; nevertheless the patient was given the urgent advise to undergo every year at least a treatment by inunction in a light form for a period of four weeks.

Case IV.—C. M., a watchmaker, twenty-eight years of age. Height, 5 feet 6 inches; weight 10 stone 7 lbs. The father died when patient was six. Two sisters died of consumption at eighteen, and the mother at forty-two, of cough with hæmorrhage. The father was a furrier, and had no brother or sister. In the mother's family cancer and diabetes were said to have existed The patient was never ill, but always delicate and subject to profuse epistaxis. He had been coughing for about three years. About a year ago he had hæmorrhage after dancing and was eleven weeks in hospital. At twenty two he had ulcus molle and gonorrhœa. About every year there was at least one re-infection. At the time of examination their existed chronic gonorrhœa. The patient had a so called "shoemaker's chest," sallow complexion, anæmia, and chronic catarrh of the larynx. On the left, in the mammillary line, pronounced dulness, likewise on the right, above. In sputum a great number of tubercle bacilli. Shreds of epithelium no mixed infection. Heart, liver, and kidneys normal. Stomach sensitive to pressure, abdomen relaxed, sunk. Spleen somewhat enlarged. Arthritis deformans of both hands, said to have set in three years after the gonorrhœal infection. Off and on night-sweats and asthma. In urine many vesicular epithelia in gonorrhœal threads, mucus some pus. Copious oxalic acid and uric acid. Crystals. No sugar or albumen. He drank to excess at least once a week, and smoked every day. Treatment: Diet. For the catarrh of the bladder 1 grm. of Urotropine in water, to be taken in the evening before going to bed. For the rest, 1 grm. of Cellotropin to be taken four times daily. The weight remained stationary, whilst the quantity of sputum increased at first but diminished subsequently, and after six weeks the cultivations of tubercle bacilli did not fructify. After eleven weeks no tuberble bacilli were seen in the sputum. After the third month the patient resorted to a "feeding up" cure in the form described in the foregoing, and in seven months he increased twenty-three pounds in weight. He was discharged as improved, with suitable directions.

In connection with this case is the following observation: I saw the patient at work in a room about thirteen feet long, eleven and a half feet wide, and ten feet high, the outer side of which was formed by two large iron-framed windows looking over a yard. There were six men and a boy in the room, which was lighted by six gas-jets with old-fashioned "split" burners. At the back wall of this hovel was a red hot stove, about two and a half feet high, with a defective pipe, which was laid through a broken corner pane. The room was ventilated from the door, and the joints were partly pasted over with paper. In front of the stove was a dirty washing pail for all the inmates. Four of the men were smoking. They were seated at work, the green-shaded lights being about eight inches above their heads. The room was swept once a week. Two of the men were over forty, one was fifty-two, one twenty-four, one twenty three, and the age of the patient was twenty-eight; the boy was about sixteen. Some of them were highly

skilled, and were on piece work. The dust, which at my request had been swept only from around the stove and from one wall, yielded quite a collection of cultivations, among which were tubercle bacilli in great numbers. Bodily examination, permission for which was reluctantly given, disclosed three to be affected by phthisis, complicated by articular rheumatism. One was syphilitic, two had chronic gonorrhœa. At the end of the week all of them were given to drink. The boy, who had been engaged one week, was in good health. Four predecessors of the older men had died of consumption. Almost all of them were in the habit of spitting. Spirits were on the work-bench of five of the men. Four were married. Of the three phthisics, two had each a child, aged four and three and a half years respectively, who slept with their parents. The unmarried man shared his bed with a baker who suffered from acute gonorrhœa.

As a remarkable feature I would add that the man whose occupation consisted in repairing clocks earned the least, and that on the work-bench very valuable watches were seen. The rent for this so called "workshop" was fifteen shillings per week. The phthisics were no longer suitable for treatment at a sanatorium. A thorough hygienic reform could not be carried out owing to the stoicism of the tenants. Still, some new burners were got, the workshop was whitewashed, and it was to be cleaned daily with a disinfecting liquid (a solution of Formalin). The three tuberculous patients took Cellotropin. The wife of only one of the married man had personal knowledge of the workshop, and it was she who managed to carry through the inadequate hygienic measures and the regular treatment with Cellotropin. The result, considering the circumstances, was excellent, and fortunately (in consequence of a quarrel) three of the older men removed, so that the remaining workers enjoyed a fairly sufficient amount of air. The boy left in the second week.

I give another case in which Cellotropin was taken by a man who was not under medical treatment. This patient suffered for about two years from a disordered stomach, "in consequence of a cold." He had the tubercular habitus. No cough or expectoration. His father and a brother and sister had died of phthisis. For six weeks he took 1 grm. of Cellotropin three times daily. His condition did not alter; weight decreased by half a pound. This feature in the characterization of Cellotropin agrees with the observation repeatedly made, that Cellotropin displays a peculiar action on the tubercle bacillus and that it proves ineffective unless there is a focus of living tubercle bacilli. The reason for this peculiarity, in my opinion, is a theory which, being only a theory, I refrain from giving here.

The above-described four cases have been taken from a numerous series of experiments. I believe that they point out a way of treating successfully the spreading of tubercle bacilli, without serious social interference. Whether in Cellotropin we have really discovered the remedy for stamping out phthisis is a point which can only be definitely established by a collection of illustrative cases. At all events—and this is the cardinal point—Cellotropin displays a bactericidal action even in cases where all other medicaments or methods known to me are ineffective, and this in itself is a great achievement.

I do not know the largest admissible doses which possibly might come in question in cases of relapse; they are, doubtless, more than 4 grms. per day. Whether they have any by-effect is not within my knowledge; the daily dose of 4 grms. did not produce any by-effect. Perhaps the fundamental views regarding tuberculosis may undergo a revolutionary change on a biological basis; possibly, however, Cellotropin may, as I hope, be recognized as the remedy against the spreading of tubercle bacilli; and then a reduction of the price, which in many cases is rather high for protracted use may perhaps be possible.—THE THERAPIST.

MECHANICAL TREATMENT OF FRACTURE OF PATELLA.

BY J. D BLOOM, M D.

Varied by the influence of a direct or indirect cause, the pathological conditions that attend patella fractures with possible separation are one and the same in variety, aggravated or not in an instance by the exaggerating effect of the trauma, or that flexion and muscular tetany provoke.

The in frequence with which patella fractures are brought to the observation of the general practitioner, in the light of varied complications that occasionally attend, makes a review of facts an inviting theme for discussion. Neglected and delayed attention forces many cases for a curative measure to the operative procedure Therefore, the method I have practiced, a procedure at once practical and of demonstrable utility, is worthy of a more general consideration.

The complicated character of the knee-joint which, in truth, is a compound diarthrodial joint, makes absolute the need of a capsular protection to insure the requirements of strength in the line of repressed action, and to withstand the tax of diverted weight and muscular action. Significant in the matter of patella injuries is the tendon of the extensor muscle, contributing to capsular strength with the patella ligaments. Properly considered, the patella is to be regarded as a sesamoid bone developed in the tendon of the quadriceps, and

the ligaments of the patella which are continued from the lower part of the patella to the tuberosity of the tibia, as the proper tendon of the insertion of the muscle. The lateral portions of the tendon of extensor muscle pass down on either side of the patella, attached to the borders of the tibia and then inserted in the upper extremity of the tibia on each side of the tuberosity. Externally these portions merge into the capsular ligaments, having been called the lateral patella ligaments.

The fascia lata becomes strong about the knee by fibrous expansion from the biceps externally, the sartorius internally the quadriceps extensor in front, and the continuation of the tensor vaginæ femoris tendon as the iliotibial band inserted into the external tibial tuberosity. The fascia is attached to the tuberosities of the tibia and fibula, and is strengthened upon each side of the patella by transverse fibres given off from the lower part of the vasti muscles, the outer as mentioned being the strogest, the internal vastus covering the joint capsule to a greater extent than that of the muscle upon the outer side.

The capsular ligament proper is exceedingly thin, but strong, filling in the intervals between the other ligaments. The strength of these ligaments vary in different individuals. The structures of the knee-joint are appreciated when the types of fractures that occur are considered. The intra-tendon variety which occurs without apparent injury to the tendon or fascia is of infrequent occurrence. Fracture with injury to the tendon with separation is of comparative frequency; fracture with tendon and capsular injury, with separation and without fascial injury is, too, a very frequent condition. Fractures involving the subcutaneous tissues of the joint contributory to extensor effort and control, and that involve the separation of patella bone, tendon fascia and capsule, to the effect of complete loss of extensor power, are the most serious of simple fractures that are met with. The multiple fragment character of a fracture is of mention in possibility.

Practically considered, we have four types of fractures with which, of course, the compound character may be associated. The protection secured to the front of the knee-joint by the tendon off-shoots and fascial strength, play an important part in fractures of the patella according as they are more or less torn. In the instance of direct violence which, indeed, is the more infrequent, the fragments are held together, except when the capsular ligaments are much lacerated. Supplemented as is frequently the case by muscular contraction, effusion or hemorrhage, the unapposed and stimulated quadriceps muscle drags the upper fragment upward until a separation from the lower of several fingers' breadth is marked; the lower fragment is much less active. The unyielding character of the ligament patella secures the lower fragment in place.

For the practical purpose of remedy we have a fracture of the extent outlined, and our measure of success in its treatment depends upon the appreciation of the existing mechanical impairment. The cross breaking strain of muscular action with the transverse and slightly oblique fractural effect in the injury, the multiple character of the break, with the combined effect of direct force and stellate, comminuted or longitudinal result caused alone by the effectiveness of the force, are purely incidental to the practical detail of remedy. The prognosis depends upon the amount of separation and extent of tear in the capsular tissue, and above all, the treatment. The more complete the fascial and capsular tear, the greater the bony separation, and the more likely a pseudarthrosis is to follow with its hindrance to locomotion.

The interposition of the fringe effect of the injury, is the aponeurosis between the fragments, preventing the apposition and adhering results that interfere so materially with the bony or ligamentous union. The unapposing effect caused by the trauma, the tetany of muscles, the aggravation and widening of the capsular gap, are enhanced or rather are indicated by a lack of bony contact. In this condition operative procedure can alone overcome the crippling effect of the injury. Patella contact insures union that is possible of a bony nature, though the greater the interspace of union that results by fibrous bands between the patella, or the faulty capsular union and its influence upon the fragments, so much the greater in the interference with the function of the leg.

The atrophy of the quadriceps and its quieting effect upon the upper fragment, that admits of its adhesion to the anterior surface of the femur, is associated with a suspension of function and loss of muscular strength which, in truth, produce the apparent contraction in great part, and provoke the dependence of joint function upon a simple fascial extensor. The atrophy, therefore, is an effect of the injury and can scarcely be considered alone the cause of the pseudarthrosis.

Anatomically considered, proportioned to patella contact is the prognosis determined as to the possibility of direct or capsular union.

Of the several methods that are recommended in the treatment of this condition, not to mention those that are devoid of any active surgical interference, the method of immobilization speaks for its inherent good.

A method that has proved successful in my hand, and that is strengthened in its purpose for good by skiagraphic and photographic showings that I present for your inspection, is the

method that is based upon a hyper-extension of the limb, and a co-aptation of the fragments. It is a method that has been tried in recent cases, and the success that has attended warrants my bringing the matter to your attention. The splint that I have devised for this purpose is in a measure crude, and could, by a little careful attention to its detail, be made more satisfactory. In the application of the splint it is preferable by far that an anesthetic be used. This will allow a through abrasion of the fragments to relieve it of the fringe inversion of the tendon which usually follows the patella fracture; at the same time offsets the muscular tetany and allows the relaxation of the joint elements to permit a secure approximation.

The splint used for this purpose is of a V-shape with inversion at its angle-shaped site, its upper flange attached to a collar for encircling the upper thigh, the lower flange resting on a triangular base for support and to accentuate the extension. A receptacle for the calf and heel is placed upon this.

Abrasion for detachment of any possible fringe adhesions to the fragments is first done. Hyper-extension by plaster strips is made in the application of the splint, and this is further reinforced by bandages on either side of the joint to strengthen and confirm its posion.

The co-apting effect of imbricated strips ½ of an inch in width secures more firmly the apposition and adds a fixity that contributes an immobilizing influence to the fractured bone.

While I have to my credit quite a number of operative cases that have all done excellently well, the fragments of one that died from other causes four weeks after. The known fact of the susceptibility of the knee-joint to infection, the method of suturing the bony fragments that may be employed, the possible traumatism, contrasted with the immunity enjoyed in the splint application and the excellent results as have been shown to me, encourage a more frequent use of this method of procedure. The splint as applied requires, of course, careful watchfulness to the calf and heel. It is well to remove the leg bandage at least once a week to observe for any pressure-necrosis that might occur from sufficient padding or sharpened pressure; as well does the re-application of the bandage both to the thigh and leg insure a more perfect result in the union. After a number of years in the use of the splint, I feel disposed at this time to advocate this measure of procedure with more emphasis than an early experience warranted.

The osseous output, that, in cases I have operated upon, seemed more evident from the lower fragment than the upper, speaking as it does for a greater blood supply to this fragment. This forms a cementing influence in the fixation that is secured through plaster strips.

It is noticeable by the views, and a matter to which attention is called, of the perfect bony union that is the result of this method, and that is secured in no other way than by a bony suture; which means a close apposition of fragments immovably held together. Supra or peri aponeurotic, or tendon suture does not secure a bony union in fractures with separation. X-Ray examinations will interpret this.

Stern, in his article entitled "Led Astray," appropriately, I think, censures the modern disposition toward the effort for specific treatment for each and every ailment that flesh is heir to, and the dependence of men in the practice of today on such issues.

Among other things he says: "Let us preserve our individuality! Observe for yourselves, think it out for yourselves, give your sympathies to your patient and give him your help and don't wait for a specific curative serum. Drop that which medical autocrats have presented to you as 'Science,'; it is an encumbrance on your energy as true physicians, it makes you uncertain in your therapeutic activity, it destroys your belief in the efficacy of your symptomatic procedures without bringing you nearer to the goal of rational medication."

This very pertinently expresses the field of modern medicine or rather, I may say, the disposition of medicine of today.

The method is one that gives a stamp of individuality to the attendant, and is worthy of consideration as to its defects and practical utility.—NEW ORLEANS MEDICAL AND SURGICAL JOURNAL.

CHOREA AND CHOREIFORM MOVEMENTS.*

BY R. W. GARNETT, M.D.

In discussing chorea and some associated conditions, I cannot lay claim to much that is original nor can I hope to bring before you many startlingly new facts, but I do hope that interest in this subject may be aroused and that, in the discussion which I trust will follow, some points of practical value will be elicited

In using here the term chorea, we refer to the acute condition commonly known as Sydenham's chorea. Although the term Saint Vitus Dance is frequently used synonymously, it is more rightly restricted to denote the epidemics of religious fervor characterized by great excitement, gesticulations and

* Read before the Piedmont Medical Society, at Orange, Va., October 19, 1907.

dancing, for the relief of which, in the middle ages, pilgrimages were made to the Chapel of Saint Vitus.

Etiology.—Acute chorea occurs most frequently in female children between the ages of five and fifteen. It is characterized by involuntary muscular twitchings with more or less mental disturbance and a tendency to endocarditis. Chorea is very rare among negroes and our American Indians. Morris J. Lewis has shown that it is more common in the spring and in localities of a high relative degree of humidity and low barometric pressure. Heredity is of importance as at least a predisposing factor. Children of neurotic parents are more likely to develop chorea. Fright, imitation and over-stimulation at school may act as exciting causes of choreic or choreiform movements. Anemia is an associated condition in nearly all cases, and by some is claimed to be a predisposing factor. Among the possible reflex causes are phimosis, lumbricoids, pinworms, delayed menstruation, and the irritation of adenoids and tonsils. Given, then, the presence of strongly predisposing conditions as the so-called rheumatic diathesis, or a neurotic constitution, the exciting causes may be varied.

Some authorities claim that scarlet fever and whooping cough have a causal relationship, but that is not sufficiently borne out by the observations of others, Osler claims that with the exception of rheumatic fever, there is no intimate relation between chorea and the acute infectious diseases of childhood. He states, however, that it has been known to develop in pyemia gonorrhea, and in puerperal fever.

The chorea of pregnancy is believed to be not, as a rule, true chorea, but largely an hysterical condition. True chorea, however, may develop in an hysterical patient.

Syphilis is not often mentioned as a cause of chorea, yet Mettler reports a case of chorea in a boy seven years old who had hereditary syphilis. There were four attacks about a year apart, each more severe than the preceding one. The usual remedies for chorea having failed, iodide of potassium was administered and in two weeks there was marked improvement and in two weeks more the movements had ceased. I have myself seen a case of cerebral lues in which there were choreiform movements of the muscles of the left side of the face and of the left forearm and hand. Under vigorous administration of the iodides there was marked improvement.

While many for a long time have held that there is a causal relation between rheumatism and chorea, I believe sufficient emphasis has not been accorded this view. It has been suggested that heart disease is a cause of chorea in that particles of fibrin and valvular vegetations pass as emboli into the cerebral vessels. It is more likely that both the endocarditis and the chorea are effects of a common infectious causative agent.

Lees, in a discussion on chorea before the British Medical Society, in 1903, remarked that chorea is often the first of a series of rheumatic attacks. Batten stated that in 115 cases of chorea studied by him the percentage of previous rheumatism was 32.2, but that in three years the percentage showing rheumatism had risen to 43 5 and in three years more it had risen to 53.2, so that the lapse of six years had increased the percentage of cases showing rheumatic involvement 21 per cent.

Lees seemed inclined to think that chorea is caused by the diplococcus of rheumatism and that chorea is cerebral rheumatism in the majority of cases. Indeed, he goes so far as to say that every case of chorea, however mild, ought to be looked on as presumably rheumatic and that many a case of mitral stenosis with its distressful years and its premature death might have been averted if the practitioner who attended the mild case of chorea in childhood had treated it vigorously as rheumatism Zerno Schwartz and R. O. Luntz, of Moscow, from a study of ninety-six cases conclude that there is evidently a close relation between acute articular rheumatism, endocarditis and chorea. The relation was apparent in 62 per cent. of the cases they described. It is easy to overlook rheumatism in a child, for its manifestations may be slight and obscure—a slight articular swelling, a patch of erythema, a sub-cutaneous nodule, or a dilated heart with a soft mitral murmur. The attack of rheumatism may run an almost latent course and the effect on the heart become manifest later. From the indefiniteness of the symptoms in many cases of children complaining of pains in the knees or other joints a diagnosis of "only growing pains" is frequently made by parents or physician. In some cases the arthritis antidates by months or years any manifestation of chorea and may not recur during the attack of chorea. Again they many be simultaneous.

Finlayson, of Glasgow, has called attention to endocarditis as a frequent cause of the obscure fever in chorea either when occurring alone with articular manifestations.

The consensus of opinion in France since 1850 has been that chorea is rheumatic in nature and rheumatism is supposed to precede, accompany, or follow it, although such eminent authorities as Gilles de la Tourette and Charcot hold that this relation does not exist. It is an interesting fact that the record of neurologists lay much less stress on the infectious nature of chorea than those working in children's clinics. This goes to show that the question hinges on the viewpoint and on what is admitted as evidence of rheumatism in a child. Holt says that of 846 cases of chorea treated by himself and his asso-

ciates at the New York Polyclinic and elsewhere there were 111 cases in which the question of rheumatism was investigated with a positive history of it in sixty-three. Previous rheumatism occurred in 37 per cent. of the cases, concurrent rheumatism in 24 per cent., and subsequent rheumatism in 15 per cent. of the cases. So that including cases with a history of "only growing pains," there was evidence of articular rheumatism in 76 per cent. of the cases. He further states that it was interesting to note as time passed how the evidence of the rheumatic diathesis multiplied.

Although so far the conclusions of the different observers as to the etiology of chorea have been somewhat contradictory, the relation of rheumatism to chorea has of recent years attracted more and more attention. From the cases that I have been able to study and from a review of the literature I believe that a large number of the cases of chorea are essentially rheumatic in nature. The tonsils in children often serve as open doors to various infectious agents which manifest their presence and their toxic powers in manifold ways, from enlarged cervical glands to rheumatism, chorea and endocarditis, and I believe that it is not going too far to add appendicitis to the same category.

It is something of a digression, but I think a pardonable one, to mention here the grave significance of diseased tonsils. I trust that it will not be thought an encroachment on the ground of the specialist when I say that the amount of absorption of toxic material is by no means in direct proportion to the size of the tonsil, for the buried or submerged variety may be far more dangerous than the billiard ball variety which every one can see.

Pathology. There is much diversity of opinion in regard to the morbid process in chorea. The embolic theory is held by some. A large number hold that it is a functional brain disorder affecting the nerve centers controlling the motor apparatus. Recently the view regarding it as an infectious disease has gained favor, and chorea, endocarditis, and rheumatism are considered by many to be the effect of a common infectious agent.

Symptoms. The onset of chorea is generally gradual though it is sometimes sudden. The attack begins most frequently in the spring when children from the strain of the winter's school work are most likely to be in an anemic nervous condition.

The first manifestations may apparently be only an increase in the nervousness and a loss of co-ordination for the finer movements so that the child may be scolded or criticized for accidents, as dropping things at table. Various groups of muscles may be involved causing grimaces, interferences with articulation, and even with walking. The movements are spasmodic and irregular varying greatly in intensity and are frequently aggravated by effort to control, by excitement, emotional outbreaks and fatigue. In severe cases the contractions may become almost constant and lead to such muscular exhaustion as to simulate paralysis or endanger life. The chief danger, however, is the acute endocarditis likely to accompany or follow the attacks. While, in some cases, the heart murmurs may be hemic in nature due to the associated anemia, they are in many cases due to crippling of the valves as proved by their persistency and by the subsequent indications of organic cardiac disease. Therefore the heart should be closely watched during every attack.

Most cases of simple chorea tend toward recovery, running a course of from two weeks to several months.

Certain local spasms or choreiform movements tend to become permanent. When this is true the patient should be thoroughly examined for some source of reflex irritation, as refractive errors, presence of nasal or pharyngeal vegetations, phimosis, adherent clitoris, pelvic abnormalities, or some disturbance in metabolism manifested not infrequently by an excessive amount of uric acid.

Diagnosis. As a rule there is little difficulty in the diagnosis of this condition from the history and the characteristic spasmodic movements. The movements following hemiplegia are more athetoid in nature, the reflexes are increased, and there is a tendency toward fixed contractions and muscular atrophy. Habit spasms or what Weir Mitchell calls habit chorea is a condition to be differentiated from Sydenham's chorea. These convulsive movements vary greatly in their location, frequency and severity appearing as sudden more or less violent gestures or grimaces. A physician of my acquaintance while standing or walking involuntarily and unconsciously forcibly flexes the leg on the thigh as it attempting to kick himself. These habit spasms or motor tics, while essentially motor in nature, usually have some sensory impulse or psychic factor for their origin. For example the case of blepharospasm which has started from the blinking of the eyelids on account of the dust on a journey may persist as a habit after the cause has ceased to act. From the presence of some catarrhal condition a child may form the habit of twitching the nose and lips and may persist in the habit after the cause has been removed, yet it was the sense of nasal discomfort that originated the condition. Not an infrequent manifestation of a motor tic is spasmodic torticollis. I have seen a case of this nature cured by suggestion in a week, showing the strong psychopatic element that these cases frequently exhibit. Many of these cases are neurotic and of unstable mental equilibrium the victims of impulses, whims and feelings.

The Impulse Tic of Gilles de la Tourette usually begins in early childhood and is sometimes confounded with chorea This peculiar affection may manifest itself first in involuntary movements involving most frequently the facial muscles; second, in strange explosive voice sounds, articulate or inarticulate; third, in some of these cases are curious psychical abnormalities as obscession with a fixed idea. Dr. Johnson had a habit of touching all the posts that he passed in his walks. I know a boy who with a fixed delusion that some one is trying to poison him looks behind every door that he passes through.

Huntingdon has described a condition which he calls Chronic Chorea or Chorea Major, an hereditary affection running through several generations but not manifesting itself until about the age of puberty. It is characterized by a gradual loss of finer coordination followed by irregular movements. The gait in some cases resembles that of a drunken man. The speech becomes indistinct and the mental faculties impaired. This condition at autopsy shows distinct changes in the motor areas and in the meninges and meningeal blood vessels. It is probably entirely distinct from true chorea.

Prognosis. Most cases of true chorea tend toward recovery. Parents should however be warned of the liability of recurrence. The heart murmurs which in some cases are functional in nature may clear up entirely, but the number that do persist is sufficient to make one solicitous as to the ultimate outcome. Cases of acute chorea with endocarditis have been fatal with no other evidence of rheumatism.

The prognosis of motor or habit spasm is often dubious. A fact making the outlook more unfavorable in neurotic children is that they have parents who are unreasonable and of unstable equilibrium. Much depends on whether or not the sensory cause often underlying motor spasms can be found and removed. The prognosis in Huntingdon chorea is always very grave.

Treatment. In the way of prophylaxis children of a neurotic temperament, especially those that are precocious, should have their lives regulated and, as far as possible, free from excitement and the baneful results of competitive school examinations.

Mild cases will recover in a short time if hygienic conditions are made favorable. Rest in the recumbent position and freedom from excitement are very important considerations. In this way much is done to lessen the danger to the cardiac valves.

Nourishing food, sunlight and good ventilation are important. In the later stages gentle massage and passive movement may be beneficially employed to keep up the tone and nutrition of the muscles.

As to the employment of medicinal measures there is considerable diversity of opinion. Until comparatively recent years Fowler's solution was deemed the sine qua non of the treatment of chorea. Although it certainly has no specific action it probably does some good by improving the general nutrition. Osler says that the good effects are not often seen until the maximum doses are being administered. Beginning with three drops three times a day the dose should be increased one drop daily until fifteen or twenty drops three times a day are being taken. The symptoms of arsenical poisoning to be watched for are gastric and intestinal irritation and puffiness under the eyes. Cases of arsenical multiple neuritis have been reported but are rare. Cases which show any connection with rheumatism should be promptly placed upon salicylate sodium in full doses, or where this is not well borne upon aspirin. Antipyrine is sometimes used for its antispasmodic effect. Severe cases may require bromides, opium, or chloral. These children usually are anemic and need general tonic and constructive treatment. All reflex factors as ocular defects, postnasal growths, etc., should, if possible, be removed. Electricity in the last stages may be beneficial.

Knowing the tendency of chorea to recur, the patient should be carefully watched and guarded against everything tending to reduce his vitality and resistance.—THE VIRGINIA MEDICAL SEMI-MONTHLY.

THE MEDICAL USES OF CARBONIC ACID.*

BY THOMAS E. SATTERTHWAITE, M.D.

The chief advantages of the Nauheim bath are that it contains carbonic acid, which slows the pulse rate, and at the same time regulates the circulation. This it does by dilating the capillaries and smaller vessels, and by directly and indirectly stimulating the nervous centers, while the peripheral nerves are soothed. The result is that local congestions are dissipated, various inflammatory deposits absorbed, and there is improved metabolism, as shown by an increased secretion of urine, all of which acting together tone up the unhealthy tissues.

It is clear, therefore, that while carbonic acid is especially applicable for chronic heart diseases, associated with heart weakness or failure, and also for neuroses, it offers advantages in subacute or chronic joint diseases where there has been a

* Read before the Chemical Society of the New York Post-Graduate Medical School and Hospital, December 20, 1907.

deposit, lithemic or tubercular. Indeed it was for gout and rheumatism, more particularly, that the Nauheim bath was first used.

Now, however, it is applied for such female ailments as metritis, salpingitis, chronic peritonitis, and after larger gynecological operations, especially where there are extensive inflammatory deposits, as in the pelvic or abdominal cavities. At Franzensbad, in Bohemia, where all the springs are highly carbonated, and where I have spent several weeks for many summers, a large proportion of the women patients resort there for these complaints, and from the fact that many are sent from a distance by their physicians, and have told me of the benefits received, I am disposed to think that the carbonated waters have had much to do with the result.

One of the later uses of the carbonated waters is for neurotic cases. This has been a newer feature of the Nauheim cure. And my experience at the Manhattan State Hospital for the Insane on Ward's Island, of carbonated baths in the treatment of mania, under the late Superintendent Dr. Dent, was very convincing as to their efficacy. Patients who previously had been quieted by drugs only, were simply kept in a carbonated bath, hour after hour and indeed sometimes day after day, and under the care of a skilful attendant, and relief of the symptoms was pretty certain to follow, without any other form of treatment.

Of course, carbonic acid, or carbon dioxide, as the chemists prefer to call it, has been known in medicine for centuries, but the profession has given it comparatively little recognition. In fact, it is not now included in the last U. S. Pharmacopeia, nor is it in any materia medica I have consulted, though a good deal of space is given to it in Stille's and Maisch's National Dispensatory.

As a component of the numberless cooling draughts, we enjoy it, but in medicine it has been almost entirely supplanted by other remedies. And yet it was once used extensively as a local application for mucous membranes; also as an antiemetic. In the last half of the ninteenth century, Percival found that it was a disinfectant, and analgesic, and improved nutrition. At one time it was employed with considerable success for ulcerating cancers, where it was found not only to relieve pain and destroy odors, but improve the patient's condition generally. It was also at one time in the last century a popular remedy for phthisis, especially in France. As late as 1883 Weill gave it by inhalation for phthisis. The cough was relieved, but only by its narcotic qualities, so that this method was soon abandoned. A few years later, (in 1886) Bergean injected it into the rectum, intending it to reach the lungs, through the venous, without affecting the arterial system. To the carbonic acid gas he added some sulphuretted hydrogen. His aim was to kill the tubercle bacilli in the lungs. The method was of course ineffectual. The gases never reached the lungs. Better results however were gained in spasmodic asthema and whooping cough. The gas was also, in these affections, injected into the bowel and it reached, as was proved the ileo-cecal valve. By inflation of the bowel in the afternoon, night attacks of asthma were prevented. Professor Rose has reported good results and indeed permanent cures in such cases. The same method has been attended with good results, it is said, in dysentery and membranous enteritis. As a soothing application for various mucous surfaces carbon dioxide has also been used. It is still a remedy at Ems for impotence and torpor of the genito-urinary organs probably stimulating the nerve centers while it acts as a local sedative. In typhoid fever one or more physicians of this city have preferred the carbonated bath to the ordinary cool bath. With a temperature of 90° F. it has been thought to be both tonic and sedative and better borne by the patients than the Brand bath. In this way it has been used at Roosevelt Hospital.

One of the oldest methods of using carbonic acid is by the dry plan, and there is a spring at Franzensbad in Bohemia known as the Polterbrunnen, where the gas is collected as it emerges from the ground, and is conveyed into a building where there are chambers just below the surface of the ground. Patients take this dry gas sitting in chairs and without removing their clothes. The gas being heavier than the air rises only a few feet, so that there is no danger of inhaling it. Soon after the gas has been turned on, there is a sensation of tingling in the feet and legs, up to the level of the gas, and subsequently an agreeable sensation of warmth, all due to dilatation of the capillaries. Persons who object to the Nauheim bath can take the gas in this dry form. The effect in each case is similar in kind, so far as the gas is concerned, but the warm water, presence of common salt and chlorid of calcium intensify the action of the gas.

Professor Rose has devised a portable tub, by which this dry method can be carried out successfully at one's home.

A novel application of carbonic acid by the douche has been proposed by Dr. Bloch of Franzensbad. Recognizing the fact discovered by Dr. Abrams of San Francisco, that friction of the precordial region will produce contraction of the heart, he proposes to douche the surface with carbonated water, by which he aims to produce the joint effect of friction and of carbonic acid. Theoretically this method should be an advance, if given cautiously and in suitable cases.

The action of the Nautheim or carbonated bath is due mainly to three things: Carbonic acid, chlorid of sodium, and chlorid of calcium. Carbonic acid dilates the capillaries directly, and also in a reflex manner, so that the peripheral resistance in the blood vessels is diminished. The first effect is a slight increase in the tension of the vessels, followed by a long continued lowering of it.

Chlorid of sodium apparently increases oxydization and is said to cause a 25% more evolution of gas. Chlorid of calcium acts chiefly as a skin irritant, intensifying the slightly irritant action of the chlorid of sodium, and probably favors tissue metabolism somewhat.

In our estimation of carbonic acid we should remember that it is a normal constituent of the body. Entering it as carbon, it is converted by an excess of oxygen into carbonic acid; or urea, which in decomposing gives off carbonic acid. It also exists normally in the blood, being one of its principal gases the others being oxygen, nitrogen and perhaps argon. In arterial blood carbonic acid is about twice as abundant as oxygen, being present is about 30-40% by volume, while oxygen is only present in about 20%. In venous blood, on the other hand, there is a large amount of carbonic acid, about 48% by volume, which in cases of asphyxiation may reach nearly as high as 70%. In arterial blood about all the oxygen present is found in the red corpuscles, while less than one per cent. is in the serum. In venous blood, on the other hand, the serum contains the largest amount of carbonic acid, while perhaps one-tuird or so is in the corpuscles. In them it exists in loose chemical union with the alkaline phosphates and hemaglobin.

Carbonic acid is a colorless, non-inflammable gas, and absorbs at the ordinary temperature about an equal amount of water. But it is heavier than air, and may be converted by pressure into a liquid and even into a solid white mass.

So far as the danger of inhaling carbonic acid is concerned, there need be little fear. Even 3% produces no permanently deleterious effect; though 5% causes dyspnea, and 10% narcotism; 1% however is almost insufferably disagreeable, and yet it is recognized so easily by its peculiar odor that one is forearmed. When suspended in the water it is at most barely 3% and hardly appreciable to one's olfactories. With the thousands of carbonated baths given annually at the various resorts, I have never heard of any cases of narcotism, even among the bath attendants, who are of all persons most exposed. At most, on a warm day and in a small room with windows shut there may be a sense of "close air," which disappears as soon as a window is opened slightly.

I am not disposed to vaunt the use of carbonated waters except in a narrow field, but I hold that as an ingredient of the Nauheim bath it has won for itself a permanent place among our newer therapeutic resources.

The methods of producing gas for the artificial bath are various. There are both machines for generating it and for mixing it. Abroad the apparatuses of Moosdorf and Hochhausler of Berlin, and Fischer and Kiefer of Karlsruhe are much used in localities where there is no natural carbonic acid gas in the waters.

For the purpose of determining the carbonated water in a state of minute division in the bath tub, the Kny-Scheerer Co. have devised special mixing cylinders, to be used in connection with the ordinary liquified carbonic acid drum, or cylinder The two mixers are attached together but the larger one is also connected with the liquified gas in the carbonic acid cylinder or drum, which in turn is connected with the water supply pipe. According to the manufacturers, 'The principle upon which this apparatus is constructed lies in the possibility of mixing gas and water under the same amouut of pressure. The pressure of the hydrant water is the unit according to which the gas pressure is regulated. To accomplish this purpose a pressure regulator is placed upon the water supply pipe, also a pressure registering gauge. For connection with the liquified carbonic acid cylinder, a gas pressure regulator and pressure registering gauge are also supplied. This forms the equipment ready to be set up at the head or foot end of a bath tub, and the apparatus is ready to be connected by any plumber with the water supply pipe."

While, however, special machinery is well adapted, for economy's sake, in bathing resorts where a large number of baths are given daily, the generation of gas by the acid sulphate of sodium tablets in conjunction with sodium bicarbonate, as manufactured by H. A Cassebeer* and others of this city has proved satisfactory in my hands, and I have generated gas in this way for ten years and more. Within the last year a new method, however, has been devised by a N. Y. firm†

The gas is developed by adding to a sodium bicarbonate powder a solution, said to consist mainly of an admixture of organic acids, (formic, lactic etc.) with a small percentage of hydrochloric acid. The method of preparing the bath is as follows:

An ordinary bath tub is filled with about fifty gallons of plain water at a temp, of 90°. The sodium powder contained

* Now made by the Shepard Pharmacal Co., 275 Water St. New York City. Cost of the ingredients for a single full bath, inclusive of the common salt, is 90 cents.

† The Kny-Scheerer Co., of New York.

in a bag is then sprinkled over the bottom of the tub, but mainly on the spot upon where the patient is to sit. As soon as he has taken his seat in the bath. the developing solution, to the amount of about oz. xx, as contained in a bottle, is poured about him. A lively evolution of gas ensues. The very trivial amount of free gas that will necessarily float on the surface of the water, is waved away with the hand at occasional intervals so that it cannot possibly be inhaled. The advantages claimed for this new method are—that the solution is stable; that being mainly composed of organic acids it cannot be in any way injurious to the patient or to the plumbing fixtures, and more gas is generated than by any other method. It has an agreeable odour. The cost of the ingredients for a single full bath is 75 cents; for a set of 12 baths, $8·00: so that the total cost is only $16.00 for an ordinary course of 24 baths. It promises well, though at present, my experience with it has been limited.

In using the acid sulphate of sodium tablets prepared by Casebeer and others, the tablets are placed upon a rubber mat* laid on the bottom of the tub, to prevent corroding of the tub, in case it is made of metal or is metal-lined. The rubber mat also provides a firm support for the feet, which is agreeable and obviates the danger of having the patient's feet slip when getting in or out of the bath tub.

DISCUSSION.

Professor Rose—Having learned a great deal during the last years from Professor Satterthwaite about the effect of carbonic acid baths on circulation, it gives me pleasure to have the privilege to take part in the discussion of his paper, and having had a great deal of experience with therapeutical application of carbonic acid in different ways I could speak a whole evening on this subject. The time being limited, I will only mention what I think is of most practical value and worth knowing.

Carbonic acid is a constant constituent of the animal organism, developing the effects of an excitant and paralyzing agent similar to alcohol. It excites vital functions, especially respiration and circulation. Without carbonic acid in our system there would be no life, no motion. It is the dynamo in the complicated mechanism. It is the small amount of carbonic acid stored up which keeps the heart vibrating in animals during hibernation and thus sustains life in such hibernating animals. The effect of carbonic acid applied on mucous surfaces is stimulating and anesthetising and on account of these two qualities it is an ideal remedy in ulcers of mucous membranes. When this gas is brought in contact with the nasal mucous membrane it produces at first a prickling but quite tolerable sensation followed by an agreeable, refreshing effect of warmth and dryness. There is first excitation of the nerve ends producing vasomotoric dilatation and glandular increased secretion; after this nervous activity becomes exhausted, the vessels become constricted and anesthesia is produced. It is impossible to exaggerate when speaking of the gratifying effect of the nasal carbonic acid gas douche in case of children, even in infants; but most of all in naso pharyngeal diphtheria. Here it surpasses by far the methods of irrigation or syringing, which are so disagreeable and by no means harmless. While children will struggle and rebel against the syringe and irrigator, they like the gas application so much that they ask for it after they have once experienced the pleasant effect. The nose becomes cleared of the accumulated mucous and matter and the little patient can keep the mouth closed and breathe freely through the nose. Children apply the nozzle themselves as soon as they feel the necessity of relief.

No exaggeration is possible either when speaking of the excellent effects of carbonic acid gas inflation of the rectum in case of dysentery. Here on account of its anesthetizing quality it relieves tenesmus and on account of its stimulating effect on the circulation it heals the ulcers of the mucous surface of the bowel. It is the ideal, the physiologically explained, therefore the most rational remedy in this disease. Ever since the year 1883 when I published the first case, I have reported the uniform good results in numerous contributions to medical journals. In studying the history of carbonic acid in medicine I learned that two English physicians in the eighteenth century had treated ulcers of the rectum especially in cases of dysentery by inflation of the bowel with carbonic acid gas. This method is not mentioned in any book since the years 1863.

In cases of rectal fistula we can make the diagnosis if the fistula is a complete one or not by passing carbonic acid gas through the external orifice. When we inflate the rectum with the gas very soon a pleasant sensation of warmth will be felt, and this same sensation of warmth is experienced if the fistula is a complete one and the gas passes through the sinus into the rectum. In case the fistula is a complete one and neither a tuberculous nor a syphilitic affection, the diagnosis will at once by the cure, that is, in very few sittings the fistula will completely and permanently be healed. My first patients thus cured I have demonstrated before this and some other medical society, and published these cases. There are two sides to this cure of which you will find not a word men-

* Made by the Cantslip Bathtub Appliance Co., 56 Pine St., New York City.

tioned in monographs on rectal diseases written by specialists of this branch of our art. It takes the most thankful cases for operation from the surgeon and gives them to the general practitioner who has no experience in operating rectal fistula. Most interesting and gratifying were the results which I and Dr. Kemp have had with carbonic acid gas inflation of the rectum in cases of mucous colic. A most remarkable case of this kind was published by me about eight years ago. Not wishing to occupy too much time here, I beg to refer to a modest book of mine: "Carbonic Acid in Medicine," in which you will find, as well as I was able to give it, all I can say here in a cursory way. I wish to call your attention especially to the most interesting history of the gas which I have collected and of which Professor Satterthwaite has mentioned some facts. Carbonic acid was very extensively used in England and France during the eighteenth century in the treatment of ulcerated cancer. The painful ulcerating and offensive ulcer will become painless, lose its offensive odor and granulation will appear, the wound will even cicatrize. The publication of such cases secured for carbonic acid a great popularity, especially in France—for a while. When it was discovered, that the relief after all was only a palliative one, when thus the great first enthusiasm had become toned down, the remedy was entirely cast aside. According to my experience, it is still to-day in many cases of cancer the best of all the palliative remedies. As Professor Satterthwaite has mentioned already, Bergeon introduced carbonic acid gas inflation of the rectum as a remedy in pulmonary phthisis and during the seventh and eight decades of the last century his method was much practiced, especially in France and in America. The patients improved under this treatment, their fever became reduced, their appetite was improved, the cough diminished—in short, the general condition was perceptibly benefited, but here as well as in the case of cancer there was no complete cure and the method is forgotten. While we can explain to some extent why carbonic acid is not applied any more or by very few in case of cancer or phthsis, it is impossible to find an explanation why it has not been appreciated as a remedy of immense value in case of chlorosis, asthma, and emphysema of the lungs when given in the form of rectal inflations. From Professor Satterthwaite's description of the effect of carbonic acid baths on circulation we see that there exists a physiological explanation why it cannot but be beneficial in these cases, be it as a bath or as inflation, provided it becomes absorbed, passes through the venous circulation and eliminated by the art of respiration. During the last century carbonic acid gas was a much employed remedy in gynecological practice. A most unfortunate error of Savanzoni, and the errors of prominent men are sometimes of far-reaching consequnces, brought carbonic acid gas in discredit. Savanzoni was under the impression that carbonic acid, when applied into the vagina, would cause contraction of the pregnant uterus and thus bring about abortion. Notwithstanding that a number of ditinguished investigators furnished conclusive evidence, by experimenting on pregnant animals, that carbonic acid never in the world will cause uterine contraction it seems that until the end of the world the error which the great Savanzoni has made can never be eradicated. At least, wherever I have spoken of the excellent physiological effect of carbonic acid gas douches into the vagina in case of emesis gravidorum, I have met with horror on the part of colleagues who were positive that abortion would be caused by the application of the gas. It is, as it seems, impossible to induce a physician to make use of the gas in case of eclampsia, so highly recommended by our Philadelphia colleague, Theodore A. Demme, in the year 1871. Early in the last century dry carbonic acid gas baths were very popular in German watering places, especially in Nauheim. Descriptions of cures were published especially by French physicians, but they lacked in scientific explanation because auscultation and percussion were not known yet. Through Professor Satterthwaite I learned that the dry carbonic acid gas bath was still given in Franzensbad, Germany, and after his description of the arrangements there I constructed my bath tub The effect of the dry carbonic acid gas bath on innervation and circulation corresponds with that of the Nauheim bath, it has the advantage over the latter that the bather does not have to undress and that the physician can have the bathing arrangement in his office. When the patient has been in the bath a minute or two he notices a sensation of warmth beginning at the feet and extending gradually by means of the penetrating power of the gas, over the surface of the body exposed to it. This changes by degrees into a piercing or prickly sensation of warmth. As the gas by itself is cool, this sensation of warmth is not due to the temperature of the gas but is a consequence of the intense irritation, which it produces, followed by increased circulation in the capillaries and manifested by reddening of the skin. The capillaries and arteries become dilated, the amount of blood in both, as well as the blood pressure in the arteries, is increased and the distole of the heart becomes more effective. After we have been in the dry carbonic acid gas bath for from fifteen to twenty minutes we feel remarkably refreshed and exhilarated. This sensation lasts for hours.

The apparatus which I have suggested are: (1) a carbonic acid generator a small cylinder containing a liquefied carbonic acid and the carbonic acid gas bath.—POST. GRADUATE.

RESPIRATORY TRACT:

AFFECTIONS, SYMPTOMS AND TREATMENT.

BY DR ARTHUR B. SMITH.

The average physician is frequently vexed in finding a condition which resists his best efforts to bring about a cure. This holds good in almost every disease at some time or other, but particularly in affections of the respiratory tract, where there may be a great variety of symptoms in several cases of the same disease.

Almost every physician has some favorite prescription for coughs, bronchitis, laryngitis, etc, which he uses until suddenly it seems to lose its efficacy-why, no one knows. Then another remedy takes its place until it, too, fails to give the desired result. It is rarely that one finds a cough remedy which will be consistently good in the majority of cases. Theoretically there appears to be a well-founded objection to the use of cough syrups in general, but nevertheless, there are times when nothing else gives satisfaction; therefore, the physician pins his faith to that remedy from which he and his patients derive the most good. It is not always easy to find such a remedy, but when it is once found, it is equally difficult to dispense with, and often the physician is almost compelled to resort to a routine treatment. In such cases, of course, he wants the best.

There are constantly being placed on the market new formulas for affections of the air passages. Some of these formulas are of undoubted benefit in some cases, but usually it will be found that the results are far from satisfactory. Many of them cannot be taken when there is any gastric complication, as is sometimes the case, because of consequent nausea and vomiting. Others seem almost invariably to act as cardiac depressants and are highly objectionable for that reason.

In phthisical patients the well known lack of appetite and intolerance of various foods render it imperative to give remedies which will not in any way interfere with the digestive functions, while at the same time controlling or alleviating the cough and other distressing conditions.

Some time ago my attention was called to a preparation composed of a solution of heroin in glycerine, combined with expectorants, called Glyco-Heroin (Smith.) Each teaspoonful of this preparation contains one-sixteenth grain of heroin by accurate dosage. It is of agreeable flavor, therefore easy to administer to children, for whom the dose can be easily reduced with any liquid, or by actual measurement. It possesses many advantages not shown by any other preparation I have used, and has none of their disagreeable feature.

In citing some of the cases treated with this remedy I shall not go into a minute description of any case, but briefly state the conditions which existed and the results obtained, which were uniformly good. Case 1. S. B., aged 16. Caught a severe cold while traveling. This developed into an unusually severe attack of bronchitis with mucous rales, pain, cough and some slight fever. Prescribed Glyco-Heroin (Smith) one teaspoonful every two hours, decreased to every three hours. After a few doses were taken there was a decided improvement, the respirations were slower and deeper, the expectoration freer and the temperature normal. In a few days the patient was practically well and able to return to school. No medicine except Glyco-Heroin (Smith) was given and the results from its use were excellent.

Case 2. W. L., aged 31. Acute bronchitis. Painful cough, with difficult expectoration, particularly when in a reclining posture. Glyco-Heroin (Smith) in teaspoonful doses every three hours gave speedy relief and a cure was effected in a few days.

Case 3. B. E., aged 26. Severe bronchitis accompanying an attack of influenza. Various remedies were tried in this case, with negative results, until Glyco-Heroin (Smith) was given in teaspoonful doses every three hours. In a short time decided relief was obtained and the cough stopped permanently.

Case 4. R. L, aged 6. Capillary bronchitis with pains over chest, cough and difficult expectoration. Glyco-Heroin (Smith) administerd 15 drops every three hours. After taking a few doses the condition was much improved, and a speedy return to health followed.

Case 5. W. H., aged 5. Whooping cough. Spasmodic paroxysms of coughing, sometimes being so severe as to cause vomiting. Tenacious mucous was present, requiring great expulsive effect to loosen it. There was little fever, but the patient was much prostrated and weakened by the cough. Glyco-Heroin (Smith) was given in 10 drop doses every two hours with good results. This was combined with hygienic treatment, the patient being given as much of fresh air as possible. In a few days the condition was much ameliorated, the cough under fair control, expectoration was freer and easier to raise, and convalescence uneventful. The case was discharged cured and there were no unpleasant sequelæ, the patient at present being in perfect health.

A Mirror of Practice.

TREATMENT OF CATARRHAL PHARYNGITIS.

The Revue internationale de medicine et de chirurgie points out that the following prescriptions are of use in acute attacks of pharyngitis. The patient must gargle gently, slowly and for some time, either with barely water, marshmallow decoction sweetened with honey, or with a salicylic solution:

℞	Sod. Salicyl	...	... 3i
	Sy. Rhorados	...	... 3i
	Decoct. Althaeae	...	ad 3viii

As soon as the inflammation has subsided a little, slightly astringent preparations, such as the following may be used:

℞	Sodii Biborat	...	... gr. xlv
	Tinct. Benzoin	...	... 3iii
	Syr. Mori	...	... 3iss
	Aq. ...	...	ad 3viii

After all inflammation has gone the patient will obtain much benefit and relief from the application of

℞	Sodii Biborat	...	... gr. xlv
	Glycerini	...	... 3i ♏

Acute attacks, however, are, as a rule, incidental to a chronic affection, and this must be taken in hand when the acute affection has passed off. Topical applications of a more energetic nature are required, the most efficient being resorcine, iodine and chloride of zinc.

℞	Sodii Biborat	...	... gr. xlv
	Resorcine	...	... gr. xxx
	Glycerini	...	... 3gr.
	Aq. Menth. Pip.	...	ad 3vj

Or

℞	Pot. Iodide	...	... gr. xxx
	Iodi ...	...	... gr. v
	Menthol	...	... gr. iiss
	Glycerini	...	... 3i ♏

The effect of these applications can be increased by using gargles.

℞	Acid Carbolici	...	... 3iii
	Resorcine	...	... gr. xv
	Glycerini	...	... 3i
	Aq. Menth. Pip.	...	... 3iss
	Aq. ...	...	ad 3viii ♏

Chloride of zinc is most useful in the chronic variety (granular sore throat, chronic pharyngeal tonsillitis). The application must be made by a medical man, with a light touch, and only at intervals.

℞	Cocain Hydrochlor ...	...	gr. iv
	Zinci Chloridi	...	... gr. xv
	Glycerini	...	... 3iss
	Aq. Dist.	...	ad 3i ♏

While these applications are all of service so far as local treatment is concerned, there are many cases in which further measures are indicated. Young, anemic girls not infrequently have a granular throat, which rapidly recovers under a course of Blaud's pills. Those who dine, wine and smoke too much are more benefited by correcting these points, and ordering a liver stimulant and a course at golf. The gouty and rheumatic should take colchicin intestinal disinfectants, salicylates and guaiacin. Then again the pharyngitis due to chronic lacumar tonsillitis can only be cured by complete removal of the offending gland. Congestive cattarrh, involving the entire mucous membrane of the upper air passages and presenting the clinical appearances seen in chronic rhinitis, pharyngitis and laryngitis, is not infrequently seen in heart disease even before failure of compensation has occurred. Asthmatic and emphysematous patients, whose bronchi are filled with tenaceous secretion which requires severe efforts to remove, suffer from catarrh of the pharynx and larynx. Mouth breathers suffer from a chronic pharyngitis which disappears on removal of the cause. Chronic nasal suppuration, syphilis, infectious diseases, gastric fermentation, bad teeth, alcohol (spirit drinkers), hawkers, etc., are also points to consider in dealing with acute or chronic pharyngitis.

Annotations.

CONCERNING FINGER BOWLS.

One of the penalties people have to pay for the privilege of meeting English royalty is to be denied the use of a finger bowl. It is a piece of antiquarian lore and dates back to the time of the Pretender. Then the Jacobites used to raise their glasses over the finger bowl in order to drink to the King. The reference was obvious, for they meant to "the King over the water," although they did not dare say so.

Some people have declared that the Jacobites used to drink from the finger bowls themselves to "Charlie across the water," but this is a needless aspersion on the followers of James II. Good men and true, they were no more in the habit of drinking water than the rest of the people of the time, and the drinking vessels in those days were sufficiently large to obviate the use of the finger bowls as we understand them today.

WHAT CAUSES THIRST?

If one goes for a long walk and returns bathed in perspiration, he will begin shortly after to feel very thirsty. It is obvious that the reason is because the functions of the skin have been very active owing to the vigorous exercise, and so much liquid has been withdrawn from the blood that the system cries out to have it replaced. This is thirst.

It may be manifested by a peculiar dryness of the mouth, or it may be a feeling of discomfort elsewhere, which is promptly gratified as soon as liquid is introduced. It is a good thing to get thirsty every day, because it shows that the eliminating organs of your body have been doing their work, and that the effete products of digestion and of work have in all probability been washed away. If you had not perspired either sensibly or insensibly, and if you had not got rid of bodily waste by having it washed out in this way, you would not have been thirsty. When you are not thirsty, the drinking of large quantities of water sometimes causes a kind of indigestion, but it never does harm to supply the body with liquid when the body is really thirsty, provided it is not done too rapidly and the liquid is not too cold.

There are some other things that cause a sensation of thirst, as, for instance, a sudden loss of blood, or a rapid drain on the vascular system, as in cholera or in diabetes, will cause thirst. The thirst of fever is not wholly caused by lack of fluid, but by the dryness of mouth and throat and skin, caused by the unnaturally high temperature of the blood.

THE OLIVE OIL CURE.

Many women exhaust their system by not taking daily care of their health. Those who are troubled to know how to proceed should take a tablespoonful of olive oil daily. It is good for the skin, the digestion and the liver, making them do their work well. Fill a wineglass partly with water, then put in the oil and more water, gulp it down, and you will not taste it. Get the best olive oil that is to be got. This is a treatment that may not suit everybody—it does not suit most people; but ask your doctor, because he may know of some bodily peculiarity that might make it disagree. There is no treatment that will suit everybody, but in nine cases out of ten those who follow this advise will testify to its wisdom, and will be quite astonished at the result. It makes you vigorous, brisk, and not over-burdened.

THE SECRET OF YOUTHFULNESS.

To preserve a youthful appearance one should freely eat fruit and vegetables, but little butcher meat should be included in the dietary. Moreover, one should always be busy, for nothing tends more to prolong youth than congenial employment and an enthusiastic interest in life The eyes of the indolent and self-centred soon lose their brilliance, and the other features become dull and insipid. Open-air exercise is, of course, good for all, although it should never be forgotten that many busy housewives would derive more benefit from a ride on a bus or car than from a walk that might invigorate women engaged in sedentary employments.

DAMP BEDS.

The peril of sleeping in a damp bed is of the greatest, and it is almost ever present. The experienced traveller rarely hazards the risk of sleeping between sheets, which are very frequently damp, until they have been thoroughly aired under his personal supervision at a fire in his bedroom. If this is impracticable, he wraps his rugs round him, or pulls out the sheets and sleeps between the blankets—a disagreeable but often prudent expedient. Direct mischief may result from the contact of an imperfectly-heated body with sheets which retain moisture. The body heat is not sufficient to raise the temperature of the linen or calico to a safe point, and the result must be disastrous if, as is sure to happen, the skin be cooled by contact with a surface colder than itself, and steadily contracting heat all the night through. There is no excuse for the neglect of proper precaution to ensure dry beds.

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The Indian Lancet.

CALCUTTA: MONDAY MARCH 2nd, 1908.

SUBSTITUTES FOR TOBACCO.

How would you enjoy a pipeful of wood shavings, saturated with a strong solution of pepper, as an after-dinner smoke? Strange as this may seem for a substitute for tobacco, it is, nevertheless, used as such by Indians along the Alaskan coast. Their mouths are often made raw by the practice, and the eyesight of many is affected by the strong fumes.

It is no uncommon practice among farmers to smoke the leaves of the tomato and potato plants. While these plants both contain a narcotic poison, the smoking of leaves in moderation is harmless. Excessive use, though, produces a heavy stupor from which the smoker awakes with a terrific headache and a feeling of utter exhaustion. Insanity and suicide have often been caused by the immoderate use of these two weeds. Rhubarb, beet, and even garden sage leaves, are all smoked by farmers, but are, perhaps, the least harmful of substitutes for tobacco.

In Jamaica "ganjah," a variety of Indian hemp, is smoked by all classes with terrible results. It is stated that it was this weed that was used by the leaders of the Indian Mutiny to drive the Sepoys into the passions of raging mania which they exhibited during that campaign. Ganjah-smoking affects the beginner in a peculiar way. While under its influence his senses of time, sound, and distance are obliterated.

A single minute may seem a month, a child's voice sounds like the rattle of a machine gun, and a little finger may seem a mile long. "Continued use causes cataleptic fits and eventually idiocy, or raving, homicidal madness."

"Coltsfoot tobacco" is smoked by the rustics in small country places in England and is called by them "the finest remedy on earth for catarrh." It is simply a powdered form of the leaves of the common coltsfoot, a plant found growing wild in chalky soil. The smoke causes no terrible after effects, although some say that it is injurious to the eyes, and it certainly does relieve difficult breathing.

In Sweden a weed found growing in the hills known as mountain tobacco, is smoked in great quantities. Like "coltsfoot tobacco," it is powdered before using and causes the smoker to become a mental and physical wreck.

Dried holly leaves, the bark of the willow tree and leaves of the stag's-horn sumach are all smoked by the American Indians, and are the least harmful of the substitutes for tobacco. "Indian tobacco," or the leaf of a kind of lobelia, is smoked extensively, and is extremely poisonous.

"Tombeki," another species of the lobelia, largely used in Asia, is smoked in a water pipe and produces a decidedly unpleasant odour. Those who smoke it regularly become intensely nervous and are subject to curious hallucinations.

In the Bahamas cascarilla-bark is another narcotic that destroys the health and mind of the smoker. Natives of Central America are inveterate users of pimento tobacco, which they make from dried pimento berries, or allspice. It invariably gives the smoker a sore throat and often causes cancer of the tongue.

The natives of South Africa are affected in a peculiar manner by the smoke from the dried leaves of the camphor plant. The smoker trembles with fright at nothing, weeps bitterly, and uses all sorts of words which do not in the least express his meaning. The old dagga, another South African plant, poisons slowly any who use it.

Probably the best known and most terrible of all poisons smoked in pipes is opium. The effects of inhaling opium smoke are at first delightful dreams, from which the smoker awakes with a severe headache and an awful thirst. The results of continued use of the drug are so horrible that they must be seen to be believed.

The victim becomes a shrunken wreck of skin and bone, with yellow countenance blotched with black marks at the corners of the eyes and mouth. The teeth turn black, the hands become mere claws, and the skin takes on a peculiar waxy appearance. The habit grows very rapidly, and in a short time the victim is a hopeless idiot.

The effects of the stramonium, or thorn apple, are equally as hideous, though less known, as those of the poppy. The plant is smoked in South American countries, and also in Europe. Convulsions often follow its use, in which the wretched man falls to the earth and digs fiercely in the ground with his fingers. Madness and death are the inevitable ends of the users of the thorn apple.

After all smoking a pipeful of good wholesome tobacco is not the worst habit one could form.

Current Medical News.

PLAGUE IN CALCUTTA.

RARITY OF FLEAS IN CALCUTTA.

As to flea prevalence in Calcutta Dr. Hossack writes :—

It has already been noted in last year's report that in Calcutta there is no tendency for men engaged on plague work to be bitten by fleas. In fact in nine years' experience of plague work here I have rarely noticed a flea except in connection with dogs, and Dr. Crake, my colleague, can only recall being bitten once. As regards bugs our experience has been quite the reverse; it is more common than not to find them crawling on one, even, in good class native houses. I have made inquiries at the hospitals and find that in the hospital admission rooms it is quite exceptional to notice fleas. Major Vaughan, I.M.S., tells me that even in the Campbell Hospital with its daily average of 300, mostly paupers, homeless vagrants and beggars picked off the street, he practically never sees a flea; it is the same at the Medical College. In fact in Calcutta P. irritans the human flea is very rare, so rare that in all the fleas I have examined I have not come across one. Pulex felis the dog flea, on the other hand is common and it is not infrequent to find it appear in a temporary and excessive prevalence in dwelling-houses in which dogs are kept. I have known of three instances of this and have personally experienced it; I noted incidentally that only a very small proportion of these fleas that swarmed over my feet and ankles actually bit me. On the other hand, as will be shown, P. felis is very rarely found on rats in Calcutta. In addition to general negative observations made in the hospitals and in the course of a long practical experience in plague work, particular and definite negative observations have been made that afford a good basis of comparison with Bombay. Dr. Crake has made three sets of observations with guinea-pig flea traps, that is to say, guinea-pigs left overnight in plague infected houses and a comparison of his results with those found in Bombay reveal a very large discrepancy. His first series of seven experiments was made in the height of the plague season of 1906 and was described in last year's report. His second series was made in the height of the epidemic of this year and the third in the middle of the slack season; details of these will be found in the Appendix.

NOT FOND OF HUMAN BLOOD.

In support of the conclusion that the rat flea is very reluctant to have anything to do with men, Dr. Hossack quotes a number of scientific opinions of which we may quote that of Tiraboschi who has shown that C. fasciatus Ct. musculi and some less common species will not bite man but show a positive distaste for his skin—although starving.

To test the matter Dr. Hossack conducted a series of striking experiements in offering starving fleas an opportunity of satisfying their hunger with human blood.

For the 200 experiments 100 fleas were used; biting was confined to 26 out of the hundred and only 7 out of the 26 bit twice; 45 out of the 100 fleas had opportunities of biting twice. Of the 7 fleas that bit twice all but one No. 85, had refused more than once. Of the 26 fleas that bit all had refused once or oftner, except No. 85, and 5 fleas which had no chance of refusal after the first bite, Nos. 56, 71, 76, 87, 100.

One flea refused to bite at all in 7 trials extending over 9 days and 7 different subjects. Another failed to bite after 6 trials eight different subjects extending over 9 days. The accidental losses were so numerous that I did not arrive at very definite conclusions as to the duration of life in fleas that did bite. In the latter days of the experiment I noted some as being very feeble in spite of having bitten once or twice. On the second day of starvation, only one flea out of 41 would bite, but as starvation progressed, bites got more frequent. Of opportunities to bite only 1 in 6 was taken and of the fleas experimented with only 1 in 4 bit at all. Considering that the fleas were starved, I think that the deduction to be drawn from those figures is that in Calcutta unstarved P. cheopis will hardly bite man at all, judging from the results on the second day of starvation (i.e., about 26 hours after the flea had been collected from the rat) and that even in advanced stages of starvation he bites man only occasionally. In this connection, attention may again be directed to the remarkable fact noted in last year's report that of the 30 men in District II, who habitually collected rats for the sake of the reward storing them in their houses only one man contracted plague, and he resided in a plague center. Again, none of the seven men engaged in handling and counting rats at the depots suffered in any way. The same thing was noted in District I in which the number of men collecting rats was much larger.

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It may be suggested that what has been proved is that the comparative immunity of Calcutta is due to the comparative absence of fleas. In the first place, it must be remembered that the immunity of Calcutta has after all been only relative. There have been over 50,000 deaths from plague in the last ten years and in the worst year (1900) I spent the greater part of a long day examining patients in huts and houses, which had from 22 to 3 or 4 cases per house, while the daily mortality bill from my four wards alone reached a maximum of nearly a hundred. Nevertheless I practically never saw a flea. The deduction rather is that an acute epidemic of plague is possible even in the absence of fleas.

No Panacea for Plague.

Finally, says, Dr. Hossack, there is no panacea for plague and all that can be done is: Do as much as is practical for the extermination of rats, preferably with the aid of specialy legislation in the matter of building. Disinfection must be carried out preferably with a pulicidal disinfectant, but the only thing on which to place reliance is the very difficult measure of general sanitary improvement. Preventive inoculation must be pressed as far as possible, but until the people display a less antagonistic attitude towards it than they do at present, it cannot be counted on much as a practical measure. Research work must be prosecuted more vigorously than it has been in the past, and the following are points on which evidence might profitably be collected. Much of the work on fleas in Calcutta has been done during the non-epidemic period; this will have to be confirmed during the epidemic period. Human post-mortems must be made to decide whether Hunter's contention is correct that even in man intestinal lesions are common and point to food infection. His feeding experiments might well be repeated here as also the Commission's flea infection experiments.

FLIES AND CHOLERA.

BACILLI DEPOSITED IN MILK.

A Classic Case.

The Indian Medical Gazette reprints the following letter addressed to the Lancet by Colonel R. Macrae, Inspector-General of Civil Hospitals, Bengal:—

I have observed with much interest articles dealing with "Flies as Carriers of Disease." This is a subject which has engaged my attention for many years, and I would invite your attention to an article by me for 1904, entitled "Flies and Cholera Diffusion."

The article is mainly a description of an outbreak of cholera in Gaya jail, of which I was then in charge, and the spread of which, in the jail, I attributed to, and proved to be due to, flies. By an experiment, the details of which were carried out for me by Mr. Haffkine, who was then my guest, I was able to prove that flies carried the cholera bacillus into milk.

Since then the influence of flies as carriers of disease, which was previously surmised, has been accepted by all well-known Indian Sanitarians, and rules based on that knowledge have been adopted by them.

We are very glad to see that Colonel Macrae has called the attention of medical men at Home to the fact that the connection between flies and disease has long been known in India and that our measures of prevention of cholera, typhoid and dysentery are largely based on this knowledge.

The case referred to by Colonel Macrae and published in these columns in November 1904 (page 407) is a particularly good one, and for the benefit of a younger generation it may be well to very briefly recapitulate the main facts of this classical case.

The outbreak of cholera occurred among the prisoners of the jail at Gaya, where Colonel Macrae was then Civil Surgeon. There were 422 prisoners in the jail at the time. On the 8th July a prisoner was admitted and put in the ward for under trial prisoners, having been sent from Hazaribagh and, having passed through many villages in Gaya district, where cholera prevailed at the time, this prisoner took ill some eighteen hours after admission to the jail, and before the illness was recognised he had passed a short time in three different portions of the jail, and unfortunately the Civil Hospital Assistant did not recognise the disease till the patient had passed several stools, which were not disinfected. The second case was in a prisoner on 12th July, who belonged to an outside gang but lived in a barrack and yard very close to the under-trial yard, where the first prisoner had spent part of the day and night. The third case was an overseer who slept in the same barrack, but not the same ward as the second case. The fourth case came from the same place as the third. The remaining cases, in all 34, came in at varying intervals from 9th to 20th July, six of them having occurred on 22nd July, and 11 within three days of each other. On 25th July 325 prisoners were moved out into Camp, and among them eight cases occurred; among the 87 prisoners left in the jail, eight cases also occurred.

Now as to the medium of the infection the water-supply can be excluded. It comes from a covered well pumped up, and though supplied to the female prisoners and the jail officers, warders and their families, none of the latter were attacked. Milk is another vehicle, and it is notable that out of twenty-six cases in the jail twelve were getting milk as part of their diet. The milk was good, but contamination by flies could not be excluded, and flies were very numerous during these hot muggy damp days of July. On one occasion, indeed, during the epidemic, Colonel Macrae found the milk kept in the (infected) hospital without a cover and full of flies.

Colonel Macrae then called in Mr. Haffkine to make an experiment and he discovered that most characteristic forms of the comma bacillus could be recovered from milk experimental-

ly exposed in the cowshed and in the latrines, where at this time, flies were especially numerous.

We are of opinion that this is a very complete case, and that the flies were undoubtedly proved to be capable of conveying the virus from infected stools to milk exposed without a proper cover.

The next case to which we may very briefly refer is one reported by the present Editor (Indian Medical Gazette, March 1897, page 86), of a somewhat similar out-break in the Burdwan jail. This case is as follows: In June 1896 a case of cholera occurred, quickly followed by several others,—nine cases in all, four of which were fatal. There had been cholera in several huts outside the north-east wall of the jail, and their stools were seen to have been spread about in the jungle close by, and to be covered with flies. On 4th June a strong north-east wind was blowing and it was noticed that myriads of flies were blown from the direction of the cholera, infected huts into the jail and that these flies settled in large numbers on the prisoner's rice, etc., etc., spread out in open. In this north-east corner of the jail, where the flies settled, one-half of the prison population took their food, and among these nine cases of cholera occurred, In the other half (females, sick and prisoners undertrial) separated from the rest, and in separate walled enclosures, no cases occurred. The water-supply was good and was the same for all. The milk was not infected as none of the gangs attacked by cholera got any milk, and those who got milk got no cholera.

These two cases illustrate the methods by which cholera can be carried by flies to the milk in one case and to the rice in another.

These cases have been mentioned by Dr. Nuttall in his great monograph on insects and disease, but recent papers in the home press would seem to imply that this conveying of disease by flies is a new discovery, whereas the above cases show that it has been long well-known to men in India.

BLOOD PRESSURE AND MENTAL CONDITIONS.

In addition to those bodily movements which are called "voluntary," various bodily phenomena which are clearly involuntary accompany violent mental excitement. The blush of shame, the distinctive flushes of joy and of anger, the pallor and sweat of fear, the tears of grief, and the "creeping" of the flesh provoked by horror are familar examples. The respiration is quickened by joy, and retarded by anxiety, and the feeling of relief finds expression in a deep sigh. Violent emotions often disturb the digestion. The heart "bounds with joy," "is paralysed by horror," "leaps to the throat" in terror. The connection between the heart and the emotions is so intimate that the heart was long regarded as the seat of the soul.

Most of these involuntary physical concomitants of mental excitement are brought about by a special part of the nervous system, the sympathetic nerve and its branches which ramify to every part of the body. The best known branches are those that govern the dilatation of the blood vessels which are profoundly affected by mental states. These phenomena are susceptible of exact quantitative determination by means of a method devised by the Italian physiologist, Mosso. The result is fairly accurate measurement of the variation of blood supply in the brain. The subject is laid on a board which is balanced on a fulcrum at the centre of gravity. When the subject is quiet and undisturbed the board lies horizontal. Now if an unpleasant sensation or emotion is induced in the subject his head is involuntarily elevated, indicating diminution in the quantity of blood in the brain. An agreeable sensation or emotion produces the opposite effect.

In the course of the last 20 years a great many experiments of this character have been made by many investigators, and have led to substantially identical results. The method of experiment should be adapted to the character of the subject. In many cases the feeling of pleasure can be aroused by offering a coin or other gift. At the moment of presentation the head-end of the board is tilted sharply down, indicating a sudden rush of blood. Then if the gift is taken away, with the explanation that it was presented in jest, the blood vessels contract, and the head-end is elevated Similar results are obtained by giving students favourable or unfavourable reports of examination papers, reading poems to persons of fine sensibilities, &c.

There are great differences in the intensity of the physical effects of various mental processes. Difficult tasks in mental arithmetic, performed in private cause only slight contraction of the blood vessels, but the same calculations made in the presence of several persons, especially persons regarded with awe, cause great contraction. In general, emotional excitement which common experience proves to be more fatiguing than purely intellectual activity, also affects the board more strongly.

SHORT ITEMS.

An indigenous case of plague was discovered a few days ago at Ootacamund, in the bazaar. The patient died after being taken to hospital. No second case has yet occurred, and it is hoped the vigilance of the authorities will prove successful in avoiding the pestilence, which however, has appeared in some neighbouring coffee estates—so far, fortunately only in isolated cases.

During the seven days ending on Friday last 295 cases and 306 deaths from plague were reported in Burma. Of these 90 cases, 85 deaths occurred in Prome and 72 cases and 75 deaths in Mandalay. In Rangoon there were 15 cases and 16 deaths.

Medical inspection is again imposed on arrivals from Alexandria.

Wasting And Faulty Assimilation.

Many obscure cases of wasting that baffle accepted methods of treatment show marked improvement under the administration of Angier's Emulsion. This remedy increases weight, by promoting digestion, improving nutrition, increasing absorption and metabolism. Moreover this increase in weight is effected on ordinary diet, overfeeding with its attending discomforts not being necessary. Angier's Emulsion inhibits the growth of putrefactive bacteria, always present in the alimentary canal, and likewise prevents intestinal fermentation and the constitutional symptoms of auto-intoxication. It stimulates peristalsis and lubricates the entire intestinal canal, and, as a result, natural bowel movements and the removal of noxious products from the bowels follow its use.

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Is acceptable to nearly all patients, as it never produces nausea, weakness nor thirst. In its use purgation is not followed by constipation, as is unfortunately and commonly the case with other purgative waters.

Does not weaken; it produces a tonic effect, stimulating the whole system; appetite is increased, sallowness and foulness of the breath disappear, headaches and vertigo vanish.

Is the only purgative water the use of which is unaccompanied with disadvantages in genito-urinary diseases.

Relieves women suffering with hemorrhoids and diseases of the uterus and ovaries, by reducing the congestion of the pelvic viscera.

Re-establishes the normal flow of bile, and is thereby a prophylactic in cases of biliary colic, due to the passage of biliary calculi.

Is indicated in cases of flatulency, bilious attacks, eczema, glandular enlargements and scrofula.

Benefits chronic nervous conditions, atony of the stomach and intestines, certain forms of diseases of the heart and circulatory system, chronic cases of skin affections and certain diseases of the lungs.

If used regularly alone, will often suffice in cases of influenza, diarrhœa, malaria, gastric and febrile disorders and infectious diseases by enabling the engorged, digestive, circulatory and lymphatic systems to regain their normal condition.

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Current Medical Literature.

MEDICINE.

NEURITIS X-RAYS IN.

The writer considers that the x-ray should be employed in the treatment of neuritis only after all other judicious methods of therapy have failed. The exposure should be directed over as wide an area as may be safe, and frequently repeated in the beginning. The strength of the current and duration of the exposures should, as a rule, be in direct ratio to approximate distance of the affected nerve-structures from the cutaneous surface overlying them, Idiosyncrasies must be carefully sought. Relief, if obtained, usually makes its appearance early in the treatment. Obstinate cases should receive "tonic" treatment with a medium tube for some time after the patient has been apparently cured, so as to further assure permanency. Post-operative treatment in nerve-resections is highly recommended by the writer. J. H. Comroe (New York Medical Journal).

POLYCYTHEMIA VERA.

By Dr. Watson (Birm. Med. Rev.)—The special clinical signs of such cases are: (1) Chronic cyanosis, well shown in the face, especially over the malar prominences, nose, lips and ears. It can also be seen in some upon the upper part of the chest, and in the hands and feet. (2) Enlargement of the spleen. This is in most cases well marked, extending beyond the costal margin, and easily felt. (3) The condition of the blood and circulatory system. The blood has a very dark purple, almost black color, flows sluggishly from a prick or slight cut, and Osler notes particularly the length of time which it takes to spread under a cover-slip. The coagulation time is markedly shortened, two minutes in one case. The great and outstanding feature, however, is the tremendous polycythemia; this is persistent, and dependent upon an increased production of erythrocytes, and with an attendant general plethora. The red cells in a case observed by the author reached 11,150 000 per cubic millimeter. The red cells vary abnormally in size, shape, and staining capacity, and there is an increase in nucleated reds. The hemoglobin values are greatly raised, attaining a percentage varying from 120 to 170. The total volume of the blood is increased, sometimes to double the normal amount. The specific gravity is also increased, as is also the viscosity. Finally, there has been observed a diminution of the white cells, with a high percentage of polymorphonuclear cells. The pulse is full, and of high tension. In some cases there is hypertrophy of the heart, but no valvular disease has been observed. (4) Albuminuria is constantly present, with an increase of urinary pigments. (5) There is progressive asthenia of gradual onset, starting with perhaps slight weakness in the legs, and the grasp is feeble. Movements are slow, and there is a general disinclination for any kind of exertion. This general muscular weakness is very characteristic of the later stages. (6) Nervous and mental symptoms consist of headaches with dizziness and vertigo. Later, there is mental torpor and impaired memory. Speech is indistinct, slow and difficult. In most cases the disease is chronic, and the symptoms have lasted for years. Post-mortem evidence distinctly points to and confirms the idea that it is a disease of the bone marrow, which takes upon itself extraordinary powers of producing red cells. But the exact cause of this renewed and vigorous activity of the shaft marrow remains unknown. The diagnosis must be made from congenital heart disease, myocarditis, adhesive pericarditis, emphysema, and other diseases of the lung and heart that might produce cyanosis. The continued use of coal-tar preparations,

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such as acetanilide, antipyrin, etc., may give rise to marked cyanosis, in some cases with enlargement of the spleen. Ribbert considers there is a form of myeloma, the tumor cells being related to erythroblasts, and these proliferating rapidly enter the blood. Another theory assumes that some toxin of a hemolytic nature is manufactured in the alimentary canal or enlarged spleen, and is absorbed into the circulating blood in minute quantities, not sufficient to cause much hemolysis, but enough to excite reaction in the hemapoietic tissues.

TUBERCULOSIS AND INFLUENZA.

The writer considers the general analogies which exist between tuberculosis and influenza, as follows: Both diseases have prevailed in epidemic and in endemic form. They are both respiratory diseases. The nervous symptoms and gastrointestinal disturbances of influenza are secondary and subsidiary, and are not surprising if looked at in the light of our new knowledge as to the connections between the absorbent lymphatic tract and the cerebrospinal system. Chronic tuberculosis displays a tendency to produce excavatory lesions, chronic influenza to produce plastic and consolidating lesions. The respective microorganisms of tuberculosis and influenza are aerobic, and successfully cultivated in general on blood-serum and hæmoglobin, respectively. The tubercle bacillus behaves essentially as a respiratory ferment. The influenza bacillus is one of the most characteristic members the hæmophilic group of bacteria. Both diseases display the same tendency in their urinary and respiratory biochemistry. The excessive hyperacidity of influenza leads to the same result as the marked hypoacidity of tuberculosis, i.e., deficiency of assimilative activity. Both are infections diseases Neither confers immunity; both predispose, on the contrary, to subsequent attacks. Both distinctly affect the functions of relation: (a) by exciting rheumatic symptoms; (b) by giving rise to meningeal and other nervous complications. The writer concludes his article by saying that "influenza is a disease of ancestral respiratory functions; tuberculosis, a disease affecting these functions in their more recent and actual phylogenetic stage." A. W. Gilchrist (British Medical Journal).

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SURGERY.

METHOD OF LIGATING THE APPENDIX WITH THE CECUM.

J. R. Pennington, Chicago. Journal of the American Medical Association.

Pennington describes and illustrates a method of ligating the appendix within the cecum by setting a snare within its cavity to catch the appendix when it is inverted. The steps of the operation and the special needle required are figured and described in detail. The advantages claimed are: speed, simplicity and case of operation; a minimum of danger to the surrounding issues; no foreign body or material is left in the peritoneal cavity and the entire appendix and the bloodvessels being ligated, the danger of hemorrhages is minimal.

THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITER.

A. Kocher, Berne, Switzerland, reports the experience with the operative treatment of exophthalmic goiter in the clinic of his father, Professor Kocher. There has been a total of 315 operations of 254 patients, with a mortality of only 3.4 per cent. and no fatalities in the last 91 operations. The extensive operations formerly done are not performed at present, and experience has shown them how better to judge the ability of the patient to undergo operation. Three things are considered essential for the surgeon to know before doing an operation of this kind: (1) the strength of the heart, the increased blood-pressure must be proportional to the degree and constancy of the tachycardia; (2) the degree of intoxication present; (3) the condition of the blood, especially the lymphocytosis. To the question: "Can the disease be cured by operation?" he answers that 83 per cent. of their patients have been cured, and all have been benefited. By most careful avoidance of bleeding, by ligation of every small vessel, and by taking the greatest care not to injure the remaining parts of the gland, alarming symptoms can be avoided. It is not necessary or permissible to attempt to remove all diseased portions. If enough can be removed and the blood supply regulated so as to bring the functioning to normal, cure will follow. The so-called diseased portion can assilmilate normally the proper blood-supply and adapt itself to normal function. In operating, Kocher makes nihil nocere the most important condition, acts only after careful preliminary observation, and prefers repeated operations under more careful observation aided by medical treatment. More than two arteries should never be ligated at one session, and it is rarely if ever necessary to remove more than one-half of the gland. Operating is not advisable when the disease is at its worst until medical treatment has been employed. Cytotoxic serum seems to act well here.—Journal of the American Association.

SQUINT, CONGENITAL.

It is doubtful whether or not a distinct discrimination is always made between congenital and concomitant squint. The usual diagnostic point of difference, the limitation of the movements of an eye, is not always easily detected in young children, and when seen may be referred to a postnasal cause. It is only after the visual centers begin to be educated that the flaw in the mechanism becomes manifest; moreover, actual paralysis may not appear until the demand on the defective cerebral center has begun to impair its function. There are,

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however, other, signs that can aid the diagnosis, and among these may be mentioned the inequality of the primary and secondary deviations, the absence of involvement of the iris and ciliary body in congenital palsies, and the reaction of degeneration in the levator in acquired cases in which ptosis is present, the detection of nystagmus in congenital squint, etc. The cause of the condition may be central, as in imperfection of brain centers, or peripheral, as in case of muscular abnormality or orbital malformation. Hereditary plays a large part, and the defect is especially frequent in Jews.

The types of deviation in congenital squint are manifold, as in shown in seventy cases reported by the writer. A not uncommon type is divergence of the visual axes, and there is frequently an anatomic basis in divergent orbits or some abnormality of muscular insertion. A summary of the types in the seventy cases is given, and the author insists on the importance of the early recognition of this abnormality, not on account of the ocular defect, but also because of its significance as a symptom of possible obscure central nervous defect. The treatment is necessarily quite different from that or concomitant squint. No orthoptic exercises are of any use; operation is the only recourse, and this often presents great difficulties. The case should be studied in every detail and the ordinary rules may have to be abandoned. A single operation is seldom sufficient; tenotomoy of one or more muscles and advancement of associates will usually have to be performed. W. C. Posey (Journal of the American Medical Association.

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OBSTETRICS.

HEMORRHAGES FROM THE CENTRAL NERVOUS SYSTEM IN THE NEWBORN IN LABORS TERMINATED BY FORCEPS.

A. Couvelaire (Ann. de Gyn. et d'Obstet., Jan., 1907; American Journal of Obstetrics and Diseases of Women and Children, May, 1907) endeavors to show that infiltrating hemorrhages into the nervous system are frequent after difficult forceps labors. Their localization is generally in the cerebellum and medulla, in contradistinction to the cerebral hemorrhages which appear in weak premature infants that die some days or weeks after delivery. The author has made a study of 213 autopsies made at the Baudelocque Hospital in the service of Pinard, during the last four years. There were seventy infants weighing over 3000 grammes—that is, well-developed infants—and among these were nine cases of hemorrhage in the medulla and bulb, without cerebellar hemorrhage; six of these occurred after forceps operations, one in a breech case and two by compression of the cord. Among the premature infants and weak ones there were eighteen cases of cerebral hemorrhage. The pressure in the bulbo-medullary hemorrhage is produced by the bones of contracted pelves, by the lower part of the cervix, which is insufficiently dilated, and by the perineum.

The author makes a study of six cases occurring after laborious forceps operations and gives his conclusions. There was an involuntary but severe pressure on the skulls of these infants in the course of forceps extraction, the process lasting from five to forty minutes. In one infant there was a dent in the frontal region due to pressure of the promontory of the sacrum, and in one a fracture of the sagittal suture from excessive biparietal pressure. The author concludes that hemorrhages are liable to occur when traction by the forceps has to act against resistance of the bones or soft parts. These hemorrhages are at a distance from the seat of pressure, in the medulla and bulbar region. This pressure drives the basal ganglia deeper into the spinal canal, and the ganglia are often infiltrated by extravasated blood. Preexistent vascular lesions due to syphilis facilitate these hemorrhages after slight pressure by forceps. The cerebral substance is exempt from these hemorrhages in infants that are delivered at full term, while they occur in premature infants that die soon after birth. In the one case in which there was a fracture of the skull there was a cerebellar hemorrhage filling the arachnoid cavity throughout the cerebrospinal axis, as well as many interstitial hemorrhages in the bulbar region and cerebellar hemispheres.

SCOPOLAMINE-MORPHINE ANÆSTHESIA IN OBSTETRICS.

Marked benefit from the use of scopolamine-morphine anæsthesia in obstetrics is reported by the writer; no bad effects were noted. The solution was used as follows: As soon as uterine contraction occurred, at five-minute intervals an initial dose containing 1/150 grain scopolamine and 1/6 grain of morphine was given hypodermically. This was repeated at intervals of one to two hours unless patient showed marked reaction to the initial dose. In no case was the dose repeated after the cervix became two-thirds dilated. The results of this treatment were that the pain of labor was remarkedly reduced; the recollection of pain endured was almost obliterated; labor was shortened, as well as made easier; the necessity of operative interference has been distinctly reduced; there has been no tendency to hæmorrhage. It is important that the drugs be used as fresh as possible. F. S. Newell (Surgery, Gynæcology, and Obstetrics.

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PATHOLOGY.

ARTERIOSCLEROSIS, MINOR SIGNS OF.

There exists a series of early symptoms of arteriosclerosis, the importance of which as indices of danger is not easily recognized by the unprepared. These symptoms are in relation with slight and variable troubles of the circulation. The arteries are less elastic, the contractility of their muscular coats is lessened and as a result the regulation of the course of blood is imperfect.

These troubles may be persistent, or may appear only as the result of labor or fatigue. The author devides these troubles into: (1) General, such as fatigue of slight exertion, accompanied perhaps by painful sensations, as in the case of a man who suffers from headache after a long walk. The expression is indicative of lassitude, or perhaps discouragement. Another condition is that of intolerance to certain substances, such as alcohol and tobacco. (2) Vasomotor, of the teguments of the face. The patients may be flushed, or, on the contrary, pale, and in some cases there is an instability of the vasomotor innervation. Some persons are pale in the morning and ruddy in the evening. (3) Nervous, shown in inaptitude for work, modifications of character, headache, abnormal sensations in the limbs with some difficulty of movement, neuralgic pains, vertigo, insomnia, neurasthenia, and the development of traumatic neuroses. (4) Loss of hearing. (5) Ocular troubles, such as the development of the arcus senilis on the cornea, thrombosis of the central artery of the retina, and spasm of the smaller retinal arteries. (6) Respiratory, a dyspnœa induced by comparatively slight exertion, and condition of emphysema, the true cause of which is not easily to be recognized unless its possible relation to arteriosclerosis is considered. (7) Epistaxis, which may be one of the first indications of the change in the arteries. (8) Œdema of the legs, not very marked, in the absence of cardiac or renal disease. (9) Cardiac troubles, such as palpitation, sometimes associated with angina; in some cases a more or less marked tachycardia is met with. (10) Arterial overtension, continous and persistent, is a good sign on which to base a suspicion of arteriosclerosis. (11) Renal symptoms, which may be those of great or little renal insufficiency. O. Josue (Presse medicale. October 23, 1907, New York Medical Journal.

CYSTITIS IN THE FEMALE.

While primary tuberculosis of the bladder in the female is doubtful, secondary tuberculosis by extension from the kidney is by no means uncommon. The treatment of vesical tuberculosis, in any case a most desperate disease, gives better results in the female than in the male. The writer divides the subject of treatment into that of primary and of secondary vesical tuberculosis, meaning by primary tuberculosis those cases in which clinically the bladder lesion is the only important one, and using the word primary in reference to the urinary tract.

In regard to non-tuberculosis cystitis, inflammation of the bladder, strictly localized and not extending to either kidney, is in most cases quite amenable to treatment. Every patient should be examined for the presence of inflammation of the ureter or the kidney. Before beginning treatment in intractable cases the upper passages must be free from disease. A nephrectomy or a nephrotomy may be necessary, a calculus may have to be removed, a strictured urethra dealt with, etc. Cure can not be expected unless these things are attended to.

In all cases of cystitis the form of organism present should be determined. Wright's method, by injection of appropriate vaccine, is a step forward. Chronic cystitis requires untiring patience. Many cases may be avoided, being the result of improper treatment in the acute stage. E. Garceau (American Journal Obstetrics.

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THERAPEUTICS.

BRIGHT'S DISEASE, THERAPEUTICS OF.

All therapeutics to be scientific, must have for the primary object the removal of the causative factors of disease. Hæmorrhagic nephritis as such does not exist. It is occasional modification of the chronic parenchymatous change. Most renal leisons are non-inflammatory processes. The one exception is the exudative class. Most renal leisons are due to overwork of the glands at a time when nutrition is impaired. Both the overuse and defective supply of the starches, sugars, and fats are important factors in the production, maintenance, and cure of renal leisons. Nervous overstrain is also an important factor.

Treatment is to be directed both to prevent and cure. It consists chiefly in the removal of causative factors. It calls for a thorough knowledge of chemico-pathology and dietetics. Drugs, while not curative, may indirectly produce wonderful results. These renal leisons, when studied from the histolgical standard only, are incurable. Considered from the physiological and chemical standpoint, a large per cent. are curable. It is difficult to see how surgery can be made to remove the underlying factors. Hence such means cannot be classed as scientific. W. H. Porter (Boston Medical Journal).

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ELLWOOD & Co., Globe Chemical Works, CALCUTTA.

WILL RADIUM CURE CANCER? A CASE.

Alfred C. Haven, Lake Forest Ill. Journal of the American Medical Association.

As decidedly encouraging the persistent use of such agencies as radium in the treatment of accessible inoperable carcinoma this case deserves to be borne in mind. Condensed, the patient's history is:

Multiparous widow. January, 1905: Growth the size of a quarter of a dollar on posterior lip of cervix, metrorrhagia, debility. Growth curetted. Microscopic diagnosis—alveolar carcinoma of very malignant type.

February 18, 1905: Vaginal hysterectomy by Dr. Dudley.

May 5, 1905: Characteristic cauliflower recurrence in scar, enlarged inguinal glands, hemorrhages.

May 15, 1905: Treatment begun by radium bromid (activity not stated). Tube inserted every night and left until morning.

For the next seven months patient grew steadily worse and disease extended into vesico-vaginal septum. Many hemorrhages Emaciation. Morphin, gr. 1½ daily.

December 2, 1905: Violent hemorrhage. Almost pulseless Growth curetted, and cauterized with equal parts of iodin and phenol; iodoform tampon. Radium continued, with slow, steady improvement.

April 1, 1906: Cancerous granulations disappeared; only scar tissue remaining.

July, 1906: No trace of original disease visible. Vagina contracted and cicatrized. Lymphatic glands normal. No pain. No morphin. Gained in strenth and weight.

September 12, 1907 (2½ years after hysterectomy):

Patient apparently strong and well. Radium treatment continued.

HEMOSTASIS IN HEMOPHILIA BY THE INJECTION OF FRESH ANIMAL SERUM.

(Die Blutstillung bei den Hemophilen durch Injektionen mit frischen tierischen Serum). Prof Broca, Paris. Medizinische Klinik.

Broca reports two cases of hemophilia in both of which the hemorrhagic manifestations were promptly controlled by the use of animal serum. The injection also confers immunity to the patient for a considerable period. The serum is applied externally to the bleeding surface or in the form of subcutaneous or intravenous injections. For intravenous use, the dose is from 10 to 20 c.cm., hypodermically 20 to 40 c.cm In children half these doses are employed. Any blood serum may be used, provided it is fresh, with the exception of cattle and dog's serum. Horse and human serum are preferably used. In practice the author has employed the freshly prepared diphtheria antitoxin serum. The average period of immunity to hemorhages is about one month.

THE VALUE OF CODEINE.

The Cleveland Medical Journal quoting from the Denver Medical Times, concerning codeine, states, that according to Butler. "it is less depressing and more stimulating than morphine, does not constipate, cause headache or nausea, and rarely leads to the formation of a habit. Codeine seems to exert a special, selective, sedative power over the pneumogastric nerve, hence its value in irritative laryngeal, pharyngeal and phthisical coughs with scanty secretion. Like morphine, it has proved of value in checking the progress of saccharine diabetes, and it has been used for long periods, without the formation of the drug habit, in as much as when glycosuria was brought to a termination by dietary and other measures, the cessation of the use of codeine was not followed by any special distress. The effects of the use of codeine on the alimentary canal are remarkable, in that it asscages pain as well or better than morphine and nevertheless does not check the secretions or peristalsis notably, unless the latter is excessive, as in dysentery." In view of these facts it would seem that Antikamnia & Codeine Tablets are a remedy which should find a wide field. Prof. Schwarze (Therapeutische Monatshefte) in writing upon the treatment of the different forms of dysmenorrhoea, and the different forms of congenital deformity of the uterus, states that the coal-tar analgesics are of much use, as well as the preparations of iron and sodium salicylate. In many cases it is necessary to administer codeine in small doses, and the tablets of "Antikamnia & Codeine" would seem to have been especially prepared in their proportions, for just these indications.

BASIS OF THERAPY IN DIABETES.

Hall says every diabetic patient shows a different degree of inability to utilize carbohydrates. Cases are divisible into: (1) Those in which the combustion of sugar and conversion into fat are defective; (2) those in which the combustion of sugar is defective, but its synethesis into fat is normal; (3) those in which the combustion of sugar is defective and the synthesis of fat begins to fall. The extent of undernutrition in diabetes may be gauged by the ketonuria or output of ketone.

The following conclusions are taken from von Noorden: Some diabetics tolerate 70 to 100 grammes of carbohydrates daily, but excrete much acetone. Many develop ketonuria by changing to a diet free from carbohydrates, and this continues when carbohydrate is again given, the prognosis being bad. Others, with strict diet, lose the ketonuria, at least for a time. Removal of carbohydrates improves the general condition and also the cause of the ketonuria. The ketonuria shows wide variations at different periods, even when diet and carbohydrate tolerance are constant, which cannot be explained. Different patients, with similar tolerance factors and the same diet, show different degrees of ketonuria.—Practitioner.

ADVERTISEMENT.

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Correspondence.

Audi Alteram Partem.

LADY MINTO AT THE MEDICAL COLLEGE HOSPITAL.

TO THE EDITOR, THE INDIAN LANCET.

SIR,—The Countess of Minto, accompanied by an A.-D.-C., visited the Medical College Hospital. On her arrival Her Excellency was received by Lieutenant-Colonel Lukis, Principal of the College, and Captain Mackelvie, Resident House Surgeon, and conducted to the different wards, where she evinced great interest in all that she saw and heard. Her Excellency then visited the Ezra Hospital, where she was shown some electrical apparatus purchased from the grant to the hospital made by her out of the proceeds of last year's Fancy fete. She expressed satisfaction in finding that the money was being so well utilized. She was particularly interested in the various demonstrations given by Captain Connor, I.M.S., who was permitted to photograph Her Excellency by means of an electric camera. After having spent an hour, she thanked the staff of the hospital and drove away with Colonel Lukis.

Lieutenant-Colonel Crooke Lawless, Surgeon to the Viceroy, who was to have accompanied Lady Minto was unavoidably absent, owing to sudden indisposition.

Yours etc.,

M. F.

HEALTH OF BRITISH TROOPS IN INDIA.

TO THE EDITOR, THE INDIAN LANCET.

SIR,—Though complete figures dealing with the health of British troops in India in 1907 cannot be completed for some time, it is satisfactory to learn that there has been considerable reduction in sickness and deaths from some of the chief diseases. The number of admissions to hospital from enteric fever were some 200 and the deaths 34 less than 1906 and the numbers are considerably below those of 1905, when the worst mortality from this disease since 1884 was reached. A steady and progressive decline in enteric fever is going on and though one deplores the number of cases which still occur, yet it is perhaps not generally recognised that the mortality is now only half what it was in the nineties, that is to say, that there are some 200 less deaths annually from this cause. On account of malarial fevers there were in 1907 about 2000 less admissions to hospital than in the previous year, and from certain other diseases which cause a very large amount of inefficiency amounted to almost the same figure.

Yours etc.,

W. G. L.

DEATH OF A PARSI DOCTOR.

TO THE EDITOR, THE INDIAN LANCET.

SIR,—In the death of Dr. Edalji Noshirvanji, which took place at his residence in Warden Road, in the seventieth year of his age, the native community has sustained the loss a very popular and able physician. He was one of the earliest graduates of the Grand Medical College, and by his sweet amiableness and unfailing courtesy he rose to the highest grade among native medical practitioners, and enjoyed a large practice among all classes and demonimations in the native community. He possessed a good knowledge of Persian, and had among his patients Moguls, Jews, and others who placed implicit confidence in his skill. He was specially noted for his skill in surgical operations, and having gained the good opinion of Dr. Mead who was some years ago in charge of the European General Hospital, he was called in by him to assist in all serious cases, more particlarly in midwifery cases in which he excelled. Hindus of all castes flocked to his dispensary more than to that of any other native physician; and thus Dr. Edalji enjoyed a most extensive and lucrative practice until a few months before his death. He was a Justice of the Peace and a Fellow of the Bombay University; and was some years ago elected Dean of the Faculty of Medicine. The deceased gentlemen was highly esteemed for his generosity in the case of poor Zoroastrian and other patients whom he

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ERGOAPIOL (SMITH)

The preparation exerts an impressive anodyne and sedative effect upon the uterus and ovaries, and imparts vitality and functional activity to the entire generative system. While the function-promoting action of the preparation is surprisingly prompt, no untoward effects attend its administration.

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Dil. Ac. Hydrocy.	½ „
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attended without fees and to whom he dispensed medicines free of charge; and his name in this manner has become a household word in all native families from the highest to the lowest. Dr. Edalji leaves behind him property worth several lakhs of rupees. His furenal was most numerously attended.

Yours etc.,

A. M. S.

LADY MINTOS NURSING ASSOCIATION.

CHIEF LADY SUPERINTENDENT'S NOTE.

TO THE EDITOR, THE INDIAN LANCET.

SIR,—The Chief Lady Superintendent's Note on the recent working of the Association deals with its work in Bengal as follows :—

Progress of a definite character has been the predominant note in the general moving forward of the Nursing Scheme since the last meeting. The question of a Provident Fund was again for consideration, and a definite decision regarding its establishment was the outcome of the meeting. A great desire on the part of the Nursing Staff has been evinced that some fund of this nature should be started in connection with the Association.

It has therefore been decided to institute a Fund for Lady Minto's Indian Association on the following lines: Each Nursing Sister will be required to contribute not less than Rs. 5 or more than Rs. 10 a month, to which a grant at the rate of 5 per cent. will be added annually upon the total payment for the year.

It was decided to reduce the quarantine periods for plague and cholera in accordance with the recent regulations of the International Sanitary Convention of Paris (1903) which officially established—

(1) that a local area should cease to be regarded as infected if no death or fresh case of plague or cholera occurred within 5 days following either the isolation or the death or recovery of the last case of plague or cholera;

(2) that all measures of disinfection had been carried out.

This reduction made by the Paris Convention has not yet been ratified by the Government of India.

Since the last Committee meeting of the Eastern Bengal and Assam Branch in October, a trained Lady Superintendent for this Province has been selected, and Miss Campbell took up her new duties early in January. Previous experience of a similar character eminently fits her for the post she is called upon to occupy, and I have every confidence that her presence will do much to advance the interests of our Association.

In December last, according to the wishes of Her Excellency and the Central Committee, I visited the four Centres in this Province.

Jalpaiguri came into existence in the early days of August. The demand for the Nursing Sisters has not so far been very great, and in several instances cases have been refused, because the summons came from beyond the prescribed area of the Duars.

The Sisters' quarter are both comfortable and suitable, though the bungalow occupies a somewhat isolated position.

Regret will be felt that one of the Nursing Sisters in the Shillong centre has been very ill for many weeks, but is now convalescent.

The Sisters are lodged temporarily in the Hotel at Shillong, though a small bungalow in the hotel grounds has been reserved for their use.

The Silchar centre was started in October with the installation of two Sisters just arrived from Home, and I heard with satisfaction that they are much appreciated from every point of view. They are lodged in a very dainty little bungalow.

The Dacca Centre was opened on November, 1st, 1907, by the transference of two Nursing Sisters from the United Pro-

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A combination of the Tonic, Alterative and Laxative Salts similar to the celebrated Bitter Waters of Europe, fortified by the addition of Lithia and Sodium Phosphate. It stimulates the liver, tones intestinal glands, purifies alimentary tract, improves digestion, assimilation and metabolism. Especially valuable in

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vinces Branch, and up to the present, the demand for their services has been limited. Their quarters are all that could be desired. The bungalow is very spacious and looks extremely attractive with its well shaded and generous verandah. Jalpaiguri represents the most important Centre financially, as it contributes per annum over Rs. 3600.

Since the formation of these four Centres, the Local Committee have come to the conclusion that it would be advisable to reduce the number of Homes on the grounds of economy and expediency, and to establish in their place a Central Home for Shillong, Silchar, and Dacca under the supervison of a trained Lady Superintendent.

Yours etc.,

W.

BERI BERI AT ALIPORE.

OUTBREAK STILL A MYSTERY.

TO THE EDITOR, THE INDIAN LANCET.

SIR,—Lieutenant F. H. Daley in his report on the 50 cases of Beri-Beri in the Alipore Reformatory School, says, the largest number of admissions on a single day were 8 on the 26th September last. Of the 50 cases only two proved fatal. The hospital being limited to 10 beds, the upper storey of a workshop was taken over as a special hospital. The cases admitted during the month of September were more or less severe, but those occurring in October and thereafter were of a milder type. The report, however, appears to be more or less of a negative character so far as the tracing of the origin of the disease is concerned. Dr. Daley says Burma rice was issued from the beginning of April 1907, up to which time the ordinary country rice of good quality was used, and that at the beginning of the outbreak a suspicion arose as to the Burma rice being the cause. He further goes on to state "it is noteworthy that none of those fed on country rice, including the Eurasian lads and those in hospital, took the disease," yet he nowhere definitely lays it down that Burma rice has occasioned the outbreak. On the contrary, he concludes the report by saying, "it is very noteworthy that in the Alipore Central Jail, which is separated from the Reformatory School by about 150 yards and whose daily population is about 2,000, there is not a single case, though Burma rice was exclusively used in the jail. He appears to be satisfied with the water-supply for drinking, culinary and bathing purposes, and with the exception of the venilation of the sleeping barracks in all other respects, in the opinion of the doctor, "the school is in a most sanitary state." Dr. Daley thinks that Beri-Beri probably remains dormant for an indefinite period before manifesting itself, and on this basis he theorizes that the disease was imported by a Magh from the Chittagong Hill Tracts who was five months in the school before the epidemic broke out. Dr. Daley would like to know "whether bugs and lice (the school has a fair share of the former, especially in the cubicles) formed any medium of communication.

Yours etc.,

C. W. S.

LAHORE AND ITS SANITATION.

TO THE EDITOR, THE INDIAN LANCET.

SIR,—The sanitary arrangements over railway areas at Lahore, are very defective. Notwithstanding there are two European Sanitary Inspectors with an enormous composition of the "Knights of the Broom," Jemadars, Crowley's patents, etc., and little wonder that of late a good number of families of railway employees have had a visitation from fever, small-pox, measles and other kindred complaints, which have further contributed to cripple the already inadequate staff of both the branches—Locomotive and Traffic. For an ocular demonstration, one has only to look down into the oval-shaped masonry intercepting tanks or, as they are commonly known slumps, situated at the corners of the roads, passing the railway quarters. They are clogged with all kinds of impurities. In order therefore to safeguard the interests of the railway public, it behoves the authorities to take suitable cognisance of the existing state of affairs in sanitary matters at this station.

Yours etc.,

E. H.

Wanted known, that a Dispensary, where all medical and surgical accessories are available has been opened at 3, Wellesley Street, under the name of Ellwood & Co.

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Glyco-Heroin (Smith)

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The marked analgesic, antispasmodic, balsamic, expectorant, mucus-modifying and inflammation-allaying properties of

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to be "a chronic functional disease of the Nervous System, the basis of which is impoverishment of Nervous force, waste of Nerve tissue in excess of repair, hence the lack of inhibitory or controlling power—physical and mental—the feebleness and instability of nerve action, and the excessive sensitiveness and irritability, local and general, direct and reflex. The fatigue and pain that temporarily follow excessive toil or worry or deprivation of food or rest, are symptoms of Acute Neurasthenia, from which the chronic form differs only in permanence and degree. Nervousness is really Nervelessness." There are thousands of people who, given up as incurables, their strength and powers undermined as a result of Nervous Exhaustion, to whom "NEW LIFE AND VIGOR" are magic words, are languishing for the greatest of all blessings: Robust Health and Restored Vitality. To all such we commend the use of B. & S. SOLUTION, the celebrated remedy discovered by Dr. Lawrence, M.D., which has been used in all parts of the world for over quarter of a century.

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This remarkable compound, the result of the latest developments of modern Chemistry, Pharmacology, and Therapeutics, is without an equal in all cases of Nervous Exhaustion and Premature decay, whether induced by worry, overwork, or other exhausting causes. As a real nervine tonic and invigorating agent it has no equal in the whole field of Therapeutics and may be relied upon to impart "NEW LIFE AND VIGOR," and to restore weakened constitutions to pristine strength and energy. When every other medicine has failed, B. and S. SOLUTION has been prescribed in the most inveterate cases by the best physicians with success, and there are thousands of living witnesses to attest to the benefits derived from this great modern invention. The Profession will find it to be without a rival and the finest medicine ever brought to their notice.

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Reviews of Books.

Manual of Diseases of the Nose, Throat and Ear.—By E. B. Gleason, M.D., LL. D., Clinical Professor of Otology, Medico-Chirurgical College, etc. Illustrated. Philadelphia and London. W. B. Saunders Co. 1907 12mo. 556 pages Flexible leather, $2. 50. net.

It is seldom that a manual such as this, prepared as a guide for students, contains so much of real, practical information for the general practitioner as well as specialist. While sufficient space is given to anatomical and physiological points, to etiology pathology, etc., the book lays special stress upon diagnosis and treatment. Methods of examination and operation are clearly described, assisted by good illustrations—many of which are original. Over forty pages are given up to therapeutic formulæ, with annotations as to conditions in which they are useful, and the methods of applying local remedies douches, etc No practitioner who undertakes to treat the commoner diseases of the nose, throat or ear would go wrong in buying this book. Beside the Table of Contents, reference to a subject is greatly aided by the full twenty-page double-column Index.

Government Medical Notifications.

INDIA.

The services of the undermentioned officers are placed temporarily at the disposal of the Government of the Punjab for employment on plague duty, with effect from the dates noted against their names :—

Captain H. Hallilay, M.B., I.M.S., forenoon of the 14th January 1908.

Captain J. O'Leary, M.B., I.M.S., forenoon of the 17th January 1908.

Captain W. F. Brayne, M.B., I.M.S., forenoon of the 12th January 1908.

Lieutenant W. D. Wright, M.B., I.M.S., afternoon of the 23rd December 1907.

The services of Captain E. A. C. Mathews, M.B., I.M.S., are replaced at the disposal of His Excellency the Commander-in-Chief in India.

No. 1129, third class Hospital Assistant Ishwari-Parshad, Indian Subordinate Medical Department, Bengal, has changed his name to Ishwari-Parshad Sharma, and all official documents and notifications concerning this medical subordinate should be altered accordingly.

BENGAL.

Babu Lalit Mohan Laha, first grade Assistant Surgeon, is appointed to do supernumerary duty in the Medical College Hospital, Calcutta, until further orders with effect from the 9th February 1908.

Babu Gopal Chandra Mitra, third grade Assistant Surgeon, is appointed to do supernumerary duty in the Medical College Hospital, Calcutta, until further orders with effect from the 14th February 1908.

Babu Satya Ranjan Sen, M.B., a passed student of the Medical College, Calcutta, is admitted into the service of Government as an Assistant Surgeon, with effect from the 1st December 1907.

Major A. Gwytner, I.M.S., Officiating Civil Surgeon of Saran is allowed combined leave for eight months, viz., privilege leave for two months and ten days under article 260 of the Civil Service Regulations, study leave for three months and furlough for the remaining period under article 308 (b) of the Regulations, with effect from the date on which he may be relieved of his duties.

Mr. G. O. Ranger, Professor of Dental Surgery, Medical College, Calcutta, is allowed leave without allowancess for seven months, under article 339 of the Civil Service Regulations, with effect from the 15th April 1908, or any subsequent date on which he may avail himself of it.

Mr. J. H. Taylor is appointed to act as Professor of Dental Surgery, Medical College Calcutta, during the absence, on leave, of Mr. G. O. Ranger, or until further orders.

Major W. W. Clemesha, I.M.S., on return from leave, is placed temporarily on special duty in connexion with plague in Bihar.

CENTRAL PROVINCES.

The undermentioned 2nd Grade Civil Assistant Surgeons, having passed the Septennial Examination, are promoted to the 1st Grade, with effect from the dates specified against their names :—

Umacharan Ray 4th April 1907, Gopal Chandra Ghosh 11th November 1907.

Colonel P. A. Weir, M.B., I.M.S. (Bengal), Inspector-General of Civil Hospitals and Sanitary Commissioner, Central Provinces, is granted privilege leave for two months and eighteen days combined with leave out of India for five months and thirteen days, under paragraph 226, Army Regulations, India, Volume II, with effect from the 12th March 1908.

BURMA.

Captain R. Kelsall, M.B., I.M.S., assumed charge of the duties of the Health Officer, Rangoon Municipality, on the afternoon of the 15th January 1908.

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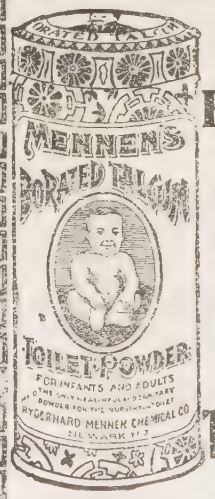

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